## What is claimed is:

# 1. A process for preparing a compound of Formula I:

or salt form thereof, wherein:

R<sup>1</sup> is H;

 $R^2$  is  $C_1$ - $C_8$  alkyl, - $CH_2$ -O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), -C(O)NH-( $C_1$ - $C_8$  alkyl),  $C_1$ - $C_4$  haloalkyl, or  $CH_2$ OH;

 $R^3$ ,  $R^4$ ,  $R^5$ , and  $R^6$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, hydroxy, mercapto,  $OR^9$ ,  $SR^9$ , alkoxyalkyl, C(O)-alkyl, C(O)-alkyl, C(O)NH-alkyl, hydroxyalkyl,  $NR^{10}R^{11}$ , CN,  $NO_2$ , heterocycloalkyl, aryl, or heteroaryl, wherein said aryl and heteroaryl can be substituted with one or more substituents selected from  $C_1$ - $C_8$  alkyl, halo,  $C_1$ - $C_8$  haloalkyl, and alkoxy; or  $R^4$  and  $R^5$  together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

 $R^{7a}$  and  $R^{7b}$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or hydroxyalkyl, or  $R^{7a}$  and  $R^{7b}$  together with the carbon atom to which they are attached form a  $C_3$ - $C_7$  cycloalkyl group;

 $R^{8a}$  and  $R^{8b}$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or hydroxyalkyl, or  $R^{8a}$  and  $R^{8b}$  together with the carbon atom to which they are attached form a  $C_3$ - $C_7$  cycloalkyl group;

 $R^9$  is H,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl;

R<sup>10</sup> and R<sup>11</sup> are each, independently, H, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>1</sub>-C<sub>8</sub> alkenyl, C<sub>1</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl, or R<sup>10</sup> and R<sup>11</sup> together with the N atom to which they are attached form a heterocyclic ring; comprising reacting a compound of Formula II:

with a reducing agent optionally in the presence of a Lewis acid for a time and under conditions suitable for forming said compound of Formula I or salt form thereof.

- 2. The process of claim 1 wherein said reducing agent comprises a borane.
- 3. The process of claim 1 wherein said reducing agent comprises BH<sub>3</sub>.
- 4. The process of claim 1 wherein said reducing agent comprises a metal hydride.
- 5. The process of claim 1 wherein said reducing agent comprises a borohydride or aluminum hydride.
- 6. The process of claim 1 wherein:

 $R^2$  is  $C_1\text{-}C_8$  alkyl, -CH2-O-(C1-C8 alkyl), C(O)O-(C1-C8 alkyl), -C(O)NH-(C1-C8 alkyl), OH, or CH2OH;

R<sup>3</sup> and R<sup>6</sup> are each H;

 $R^4$  and  $R^5$  are each, independently, H, halo,  $C_1$ - $C_8$  haloalkyl, hydroxy,  $OR^9$ ,  $SR^9$ , alkoxyalkyl,  $NHR^{10}$ ,  $NR^{10}R^{11}$ , aryl, or heteroaryl, wherein said aryl can be substituted with up to two substituents selected from  $C_1$ - $C_8$  alkyl, halo,  $C_1$ - $C_8$  haloalkyl, and alkoxy, and said heteroaryl can be optionally substituted with up to two substituents selected from halogen and  $C_1$ - $C_8$  alkyl; or  $R^4$  and  $R^5$  together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

R<sup>7a</sup> is H;

R<sup>7b</sup> is H or C<sub>1</sub>-C<sub>8</sub> alkyl;

R8a and R8b are each H; and

 $R^{10}$  and  $R^{11}$  are each, independently,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  haloalkyl, aryl, heteroaryl, aralkyl, heteroarylalkyl, or allyl;

provided that:

(A) if  $R^2$  is methyl and  $R^4$  is H, then  $R^5$  is not thiazole, substituted thiazole or a thiazole derivative; and

- (B) if R<sup>7a</sup> is H and R<sup>7b</sup> is other than H, then neither R<sup>4</sup> nor R<sup>5</sup> can be H.
- 7. The process of claim 6 wherein R<sup>2</sup> is methyl, ethyl, n-propyl, or isopropyl.
- 8. The process of claim 6 wherein  $R^2$  is methyl.
- 9. The process of claim 6 wherein R<sup>4</sup> is Cl, Br, haloalkyl, CF<sub>3</sub>, thiophenyl, furanyl, pyrrolyl, pyrazolyl, or imidazolyl.
- 10. The process of claim 6 wherein R<sup>4</sup> is Cl.
- 11. The process of claim 6 wherein  $\mathbb{R}^5$  is methoxy, ethoxy, n-propoxy, isopropoxy, allyloxy, thiophenyl, furanyl, pyrrolyl, pyrazolyl, imidazolyl, or phenyl, wherein said imidazolyl is optionally substituted by one or more halo or methyl and said phenyl is optionally substituted with up to two substituents selected from  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  haloalkyl, halo, and alkoxy.
- 12. The process of claim 6 wherein R<sup>5</sup> is H.
- 13. The process of claim 1 wherein:

R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl, -CH<sub>2</sub>-O-(C<sub>1</sub>-C<sub>4</sub> alkyl), C<sub>1</sub>-C<sub>4</sub> haloalkyl, or CH<sub>2</sub>OH;

 $R^3$ ,  $R^4$ ,  $R^5$ , and  $R^6$  are each, independently, H, halo,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  haloalkyl, hydroxy,  $NH_2$ , CN, or  $NO_2$ ; and

 $R^{7a}$ ,  $R^{7b}$ ,  $R^{8a}$ , and  $R^{8b}$  are each H; provided that:

- (H) when  $R^2$  is  $C_1$ - $C_4$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_4$  alkyl), or CH<sub>2</sub>OH, then  $R^3$  and  $R^6$  are not both H; and
  - (I) when R<sup>2</sup> is CH<sub>3</sub>, then R<sup>3</sup>, R<sup>4</sup>, and R<sup>6</sup> are each H and R<sup>5</sup> is not H or isopropyl.
- 14. The process of claim 13 wherein R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl or C<sub>1</sub>-C<sub>4</sub> haloalkyl.
- 15. The process of claim 13 wherein R<sup>2</sup> is methyl, ethyl, isopropyl, n-butyl, or CF<sub>3</sub>.
- 16. The process of claim 13 wherein R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, methyl, NH<sub>2</sub>, CN, halo, CF<sub>3</sub>, NO<sub>2</sub>, or OH.
- 17. The process of claim 1 wherein R<sup>7a</sup>, R<sup>7b</sup>, R<sup>8a</sup>, and R<sup>8b</sup> are each H.
- 18. The process of claim 1 wherein R<sup>3</sup> and R<sup>6</sup> are each H.

- 19. The process of claim 1 wherein R<sup>3</sup>, R<sup>5</sup>, and R<sup>6</sup> are each H.
- 20. The process of claim 1 wherein  $R^4$  is halo.
- 21. The process of claim 1 wherein R<sup>4</sup> is Cl.
- 22. The process of claim 1 wherein  $R^2$  is  $C_1$ - $C_4$  alkyl.
- 23. The process of claim 1 wherein  $R^2$  is methyl.
- 24. The process of claim 1 wherein  $R^2$  is  $C_1$ - $C_4$  alkyl,  $R^3$  is H,  $R^4$  is halo,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 25. The process of claim 1 wherein  $R^2$  is Me,  $R^3$  is H,  $R^4$  is Cl,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 26. The process of claim 1 wherein said compound of Formula I has an S configuration at the carbon bearing  $\mathbb{R}^2$ .
- 27. The process of claim 1 wherein said compound of Formula I has an R configuration at the carbon bearing  $R^2$ .
- 28. A process for preparing a compound of Formula II:

or salt form thereof,

wherein:

R<sup>1</sup> is H or C<sub>1</sub>-C<sub>8</sub> alkyl;

 $R^2$  is  $C_1$ - $C_8$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), -C(O)NH-( $C_1$ - $C_8$  alkyl), OH,  $C_1$ - $C_4$  haloalkyl, or CH<sub>2</sub>OH;

R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>2</sub>-C<sub>8</sub> alkenyl, C<sub>2</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, hydroxy, mercapto, OR<sup>9</sup>, SR<sup>9</sup>, alkoxyalkyl, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, hydroxyalkyl, NR<sup>10</sup>R<sup>11</sup>, CN, NO<sub>2</sub>, heterocycloalkyl, aryl, or heteroaryl, wherein said aryl and heteroaryl can be substituted with one or more substituents selected from C<sub>1</sub>-C<sub>8</sub> alkyl, halo, C<sub>1</sub>-C<sub>8</sub> haloalkyl, and alkoxy; or R<sup>4</sup> and R<sup>5</sup> together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

 $R^{7a}$  and  $R^{7b}$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or hydroxyalkyl, or  $R^{7a}$  and  $R^{7b}$  together with the carbon atom to which they are attached form a  $C_3$ - $C_7$  cycloalkyl group;

 $R^{8a}$  and  $R^{8b}$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or hydroxyalkyl, or  $R^{8a}$  and  $R^{8b}$  together with the carbon atom to which they are attached form a  $C_3$ - $C_7$  cycloalkyl group;

 $R^9$  is H,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl;

 $R^{10}$  and  $R^{11}$  are each, independently, H,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl, or  $R^{10}$  and  $R^{11}$  together with the N atom to which they are attached form a heterocyclic ring; comprising reacting a compound of Formula III:

$$R^4$$
 $R^{7b}$ 
 $R^{7a}$ 
 $R^{7a}$ 

or salt form thereof, wherein:

L is halo, hydroxy,  $C_1$ - $C_8$  alkoxy,  $C_1$ - $C_8$  thioalkoxy,  $C_1$ - $C_8$  acyloxy, -OSO<sub>2</sub>R, or -OSi(R')<sub>3</sub>;

R is  $C_1$ - $C_8$  alkyl, aryl, or heteroaryl each optionally substituted by one or more halo, cyano, nitro,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  haloalkyl,  $C_1$ - $C_4$ 

R' is C<sub>1</sub>-C<sub>8</sub> alkyl;

with a cyclizing reagent for a time and under conditions suitable for forming said compound of Formula II or salt form thereof.

29. The process of claim 28 wherein said cyclizing reagent comprises a Lewis acid.

30. The process of claim 28 wherein said cyclizing reagent comprises a C<sub>1</sub>-C<sub>8</sub> alkyl aluminum halide.

- 31. The process of claim 28 wherein said cyclizing reagent comprises a C<sub>2</sub>-C<sub>16</sub> dialkyl aluminum halide.
- 32. The process of claim 28 wherein said cyclizing reagent comprises AlCl<sub>3</sub>.
- 33. The process of claim 28 wherein said cyclizing reagent comprises an acid.
- 34. The process of claim 28 wherein said cyclizing reagent comprises sulfuric acid.
- 35. The process of claim 28 wherein said reacting is carried out in the absence of solvent.
- 36. The process of claim 28 wherein said reacting is carried out in the presence of solvent.
- 37. The process of claim 28 wherein said reacting is carried out in a non-polar solvent.
- 38. The process of claim 28 wherein said reacting is carried out in a solvent comprising decahydronaphthalene or 1,2-dichlorobenzene.
- 39. The process of claim 28 wherein said reacting is carried out at elevated temperature.
- 40. The process of claim 28 wherein:

 $R^2$  is  $C_1$ - $C_8$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), -C(O)NH-( $C_1$ - $C_8$  alkyl), OH, or CH<sub>2</sub>OH;

R<sup>3</sup> and R<sup>6</sup> are each H;

 $R^4$  and  $R^5$  are each, independently, H, halo,  $C_1$ - $C_8$  haloalkyl, hydroxy,  $OR^9$ ,  $SR^9$ , alkoxyalkyl,  $NHR^{10}$ ,  $NR^{10}R^{11}$ , aryl, or heteroaryl, wherein said aryl can be substituted with up to two substituents selected from  $C_1$ - $C_8$  alkyl, halo,  $C_1$ - $C_8$  haloalkyl, and alkoxy, and said heteroaryl can be optionally substituted with up to two substituents selected from halogen and  $C_1$ - $C_8$  alkyl; or  $R^4$  and  $R^5$  together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

R<sup>7b</sup> is H or C<sub>1</sub>-C<sub>8</sub> alkyl;

R<sup>8a</sup> and R<sup>8b</sup> are each H; and

 $R^{10}$  and  $R^{11}$  are each, independently,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  haloalkyl, aryl, heteroaryl, aralkyl, heteroarylalkyl, or allyl;

provided that:

(A) if R<sup>2</sup> is methyl and R<sup>4</sup> is H, then R<sup>5</sup> is not thiazole, substituted thiazole or a thiazole derivative;

- (B) if R<sup>7a</sup> is H and R<sup>7b</sup> is other than H, then neither R<sup>4</sup> nor R<sup>5</sup> can be H;
- (C) if R<sup>1</sup> and R<sup>2</sup> are methyl, and R<sup>5</sup> is H then R<sup>4</sup> is not NHR<sup>10</sup> or NR<sup>10</sup>R<sup>11</sup>; and
- (D) if R<sup>1</sup> and R<sup>2</sup> are methyl and R<sup>5</sup> is H, then R<sup>4</sup> is not imidazolyl, substituted imidazolyl, or an imidazole derivative.
- 41. The process of claim 40 wherein R<sup>1</sup> is H.
- 42. The process of claim 40 wherein  $R^1$  is  $C_1$ - $C_8$  alkyl.
- 43. The process of claim 40 wherein R<sup>2</sup> is methyl, ethyl, n-propyl, or isopropyl.
- 44. The process of claim 40 wherein R<sup>2</sup> is methyl.
- 45. The process of claim 40 wherein R<sup>4</sup> is Cl, Br, haloalkyl, CF<sub>3</sub>, thiophenyl, furanyl, pyrrolyl, pyrazolyl, or imidazolyl.
- 46. The process of claim 40 wherein R<sup>4</sup> is Cl.
- 47. The process of claim 40 wherein  $R^5$  is methoxy, ethoxy, n-propoxy, isopropoxy, allyloxy, thiophenyl, furanyl, pyrrolyl, pyrazolyl, imidazolyl, or phenyl, wherein said imidazolyl is optionally substituted by one or more halo or methyl and said phenyl is optionally substituted with up to two substituents selected from  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  haloalkyl, halo, and alkoxy.
- 48. The process of claim 40 wherein R<sup>5</sup> is H.
- 49. The process of claim 28 wherein:

R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl, -CH<sub>2</sub>-O-(C<sub>1</sub>-C<sub>4</sub> alkyl), C<sub>1</sub>-C<sub>4</sub> haloalkyl, or CH<sub>2</sub>OH;

 $R^3$ ,  $R^4$ ,  $R^5$ , and  $R^6$  are each, independently, H, halo,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  haloalkyl, hydroxy,  $NH_2$ , CN, or  $NO_2$ ; and

R<sup>7a</sup>, R<sup>7b</sup>, R<sup>8a</sup>, and R<sup>8b</sup> are each H; provided that:

- (H) when  $R^2$  is  $C_1$ - $C_4$  alkyl, - $CH_2$ -O-( $C_1$ - $C_4$  alkyl), or  $CH_2$ OH, then  $R^3$  and  $R^6$  are not both H; and
  - (I) when  $R^2$  is  $CH_3$ , then  $R^3$ ,  $R^4$ , and  $R^6$  are each H and  $R^5$  is not H or isopropyl.
- 50. The process of claim 49 wherein R<sup>1</sup> is H.

- 51. The process of claim 212 wherein  $R^1$  is  $C_1$ - $C_8$  alkyl.
- 52. The process of claim 213 wherein  $R^2$  is  $C_1$ - $C_4$  alkyl or  $C_1$ - $C_4$  haloalkyl.
- 53. The process of claim 214 wherein R<sup>2</sup> is methyl, ethyl, isopropyl, n-butyl, or CF<sub>3</sub>.
- 54. The process of claim 49 wherein R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, methyl, NH<sub>2</sub>, CN, halo, CF<sub>3</sub>, NO<sub>2</sub>, or OH.
- 55. The process of claim 28 wherein R<sup>7a</sup>, R<sup>7b</sup>, R<sup>8a</sup>, and R<sup>8b</sup> are each H.
- 56. The process of claim 28 wherein R<sup>3</sup> and R<sup>6</sup> are each H.
- 57. The process of claim 28 wherein R<sup>3</sup>, R<sup>5</sup>, and R<sup>6</sup> are each H.
- 58. The process of claim 28 wherein R<sup>4</sup> is halo.
- 59. The process of claim 28 wherein  $R^4$  is Cl.
- 60. The process of claim 28 wherein  $R^2$  is  $C_1$ - $C_4$  alkyl.
- 61. The process of claim 28 wherein R<sup>2</sup> is methyl.
- 62. The process of claim 28 wherein  $R^1$  is H.
- 63. The process of claim 28 wherein  $R^1$  is H or  $C_1$ - $C_4$  alkyl,  $R^2$  is  $C_1$ - $C_4$  alkyl,  $R^3$  is H,  $R^4$  is halo,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 64. The process of claim 28 wherein  $R^1$  is H,  $R^2$  is Me,  $R^3$  is H,  $R^4$  is Cl,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 65. A process for preparing a compound of Formula I:

or salt form thereof, wherein:

 $R^1$  is H or  $C_1$ - $C_8$  alkyl;

 $R^2$  is  $C_1$ - $C_8$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), -C(O)NH-( $C_1$ - $C_8$  alkyl), OH,  $C_1$ - $C_4$  haloalkyl, or CH<sub>2</sub>OH;

R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>2</sub>-C<sub>8</sub> alkenyl, C<sub>2</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, hydroxy, mercapto, OR<sup>9</sup>, SR<sup>9</sup>, alkoxyalkyl, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, hydroxyalkyl, NR<sup>10</sup>R<sup>11</sup>, CN, NO<sub>2</sub>, heterocycloalkyl, aryl, or heteroaryl, wherein said aryl and heteroaryl can be substituted with one or more substituents selected from C<sub>1</sub>-C<sub>8</sub> alkyl, halo, C<sub>1</sub>-C<sub>8</sub> haloalkyl, and alkoxy; or R<sup>4</sup> and R<sup>5</sup> together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

 $R^{7a}$  and  $R^{7b}$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or hydroxyalkyl, or  $R^{7a}$  and  $R^{7b}$  together with the carbon atom to which they are attached form a  $C_3$ - $C_7$  cycloalkyl group;

 $R^{8a}$  and  $R^{8b}$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or hydroxyalkyl, or  $R^{8a}$  and  $R^{8b}$  together with the carbon atom to which they are attached form a  $C_3$ - $C_7$  cycloalkyl group;

 $R^9$  is H,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, aralkyl, aryl, heteroarylalkyl, or allyl; and

 $R^{10}$  and  $R^{11}$  are each, independently, H,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl, or  $R^{10}$  and  $R^{11}$  together with the N atom to which they are attached form a heterocyclic ring; comprising:

(a) reacting a compound of Formula III:

$$R^{4}$$
 $R^{5}$ 
 $R^{7b}$ 
 $R^{7a}$ 
 $R^{7a}$ 
 $R^{2}$ 
 $R^{6}$ 
 $R^{8b}$ 
 $R^{8a}$ 
 $R^{8a}$ 
 $R^{1}$ 

or salt form thereof,

wherein:

L is halo, hydroxy,  $C_1$ - $C_8$  alkoxy,  $C_1$ - $C_8$  thioalkoxy,  $C_1$ - $C_8$  acyloxy, -OSO<sub>2</sub>R, or -OSi(R')<sub>3</sub>;

R is  $C_1$ - $C_8$  alkyl, aryl, or heteroaryl each optionally substituted by one or more halo, cyano, nitro,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  haloalkyl,  $C_1$ - $C_4$  alkoxy, or  $C_1$ - $C_4$  haloalkoxy; and

R' is C<sub>1</sub>-C<sub>8</sub> alkyl;

with a cyclizing reagent for a time and under conditions suitable for forming a compound of Formula II:

or salt form thereof; and

- (b) reacting said compound of Formula II or salt form thereof with a reducing agent optionally in the presence of a Lewis acid for a time and under conditions suitable for forming said compound of Formula I or salt form thereof.
- 66. The process of claim 65 wherein said cyclizing reagent comprises a Lewis acid.
- 67. The process of claim 65 wherein said cyclizing reagent comprises a C<sub>1</sub>-C<sub>8</sub> alkyl aluminum halide.
- 68. The process of claim 65 wherein said cyclizing reagent comprises a C<sub>2</sub>-C<sub>16</sub> dialkyl aluminum halide.
- 69. The process of claim 65 wherein said cyclizing reagent comprises AlCl<sub>3</sub>.

- The process of claim 65 wherein said cyclizing reagent comprises an acid.
- 71. The process of claim 65 wherein said cyclizing reagent comprises sulfuric acid.
- 72. The process of claim 65 wherein said reacting of step a) is carried out in the absence of solvent.
- The process of claim 65 wherein said reacting of step a) is carried out in the presence of solvent. 73.
- 74. The process of claim 65 wherein said reacting of step a) is carried out in a non-polar solvent.
- 75. The process of claim 65 wherein said reacting of step a) is carried out in a solvent comprising decahydronaphthalene or 1,2-dichlorobenzene.
- 76. The process of claim 65 wherein said reducing agent comprises a borane.
- 77. The process of claim 65 wherein said reducing agent comprises BH<sub>3</sub>.
- 78. The process of claim 65 wherein said reducing agent comprises a metal hydride.
- 79. The process of claim 65 wherein said reducing agent comprises a borohydride or aluminum hydride.
- 80. The process of claim 65 wherein:

 $R^2$  is  $C_1-C_8$  alkyl,  $-CH_2-O-(C_1-C_8$  alkyl),  $C(O)O-(C_1-C_8$  alkyl),  $-C(O)NH-(C_1-C_8$  alkyl), OH, or CH<sub>2</sub>OH;

R<sup>3</sup> and R<sup>6</sup> are each H:

R<sup>4</sup> and R<sup>5</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>8</sub> haloalkyl, hydroxy, OR<sup>9</sup>, SR<sup>9</sup>, alkoxyalkyl, NHR<sup>10</sup>, NR<sup>10</sup>R<sup>11</sup>, aryl, or heteroaryl, wherein said aryl can be substituted with up to two substituents selected from C<sub>1</sub>-C<sub>8</sub> alkyl, halo, C<sub>1</sub>-C<sub>8</sub> haloalkyl, and alkoxy, and said heteroaryl can be optionally substituted with up to two substituents selected from halogen and C<sub>1</sub>-C<sub>8</sub> alkyl; or R<sup>4</sup> and R<sup>5</sup> together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

R<sup>7b</sup> is H or C<sub>1</sub>-C<sub>8</sub> alkyl:

R<sup>8a</sup> and R<sup>8b</sup> are each H: and

 $R^{10}$  and  $R^{11}$  are each, independently,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  haloalkyl, aryl, heteroaryl, aralkyl, heteroarylalkyl, or allyl:

provided that:

(A) if R<sup>2</sup> is methyl and R<sup>4</sup> is H, then R<sup>5</sup> is not thiazole, substituted thiazole or a thiazole derivative;

- (B) if  $R^{7a}$  is H and  $R^{7b}$  is other than H, then neither  $R^4$  nor  $R^{5}$  can be H;
- (C) if R<sup>1</sup> and R<sup>2</sup> are methyl, and R<sup>5</sup> is H then R<sup>4</sup> is not NHR<sup>10</sup> or NR<sup>10</sup>R<sup>11</sup>; and
- (D) if  $R^1$  and  $R^2$  are methyl and  $R^5$  is H, then  $R^4$  is not imidazolyl, substituted imidazolyl, or an imidazole derivative.
- 81. The process of claim 80 wherein R<sup>2</sup> is methyl, ethyl, n-propyl, or isopropyl.
- 82. The process of claim 80 wherein  $R^2$  is methyl.
- 83. The process of claim 80 wherein R<sup>4</sup> is Cl, Br, haloalkyl, CF<sub>3</sub>, thiophenyl, furanyl, pyrrolyl, pyrazolyl, or imidazolyl.
- 84. The process of claim 80 wherein  $R^4$  is Cl.
- 85. The process of claim 80 wherein  $R^5$  is methoxy, ethoxy, n-propoxy, isopropoxy, allyloxy, thiophenyl, furanyl, pyrrolyl, pyrazolyl, imidazolyl, or phenyl, wherein said imidazolyl is optionally substituted by one or more halo or methyl and said phenyl is optionally substituted with up to two substituents selected from  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  haloalkyl, halo, and alkoxy.
- 86. The process of claim 80 wherein R<sup>5</sup> is H.
- 87. The process of claim 65 wherein:

R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl, -CH<sub>2</sub>-O-(C<sub>1</sub>-C<sub>4</sub> alkyl), C<sub>1</sub>-C<sub>4</sub> haloalkyl, or CH<sub>2</sub>OH;

 $R^3$ ,  $R^4$ ,  $R^5$ , and  $R^6$  are each, independently, H, halo,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  haloalkyl, hydroxy,  $NH_2$ , CN, or  $NO_2$ ; and

R<sup>7a</sup>, R<sup>7b</sup>, R<sup>8a</sup>, and R<sup>8b</sup> are each H; provided that:

- (H) when R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl, -CH<sub>2</sub>-O-(C<sub>1</sub>-C<sub>4</sub> alkyl), or CH<sub>2</sub>OH, then R<sup>3</sup> and R<sup>6</sup> are not both H; and
  - (I) when R<sup>2</sup> is CH<sub>3</sub>, then R<sup>3</sup>, R<sup>4</sup>, and R<sup>6</sup> are each H and R<sup>5</sup> is not H or isopropyl.
- 88. The process of claim 65 wherein R<sup>7a</sup>, R<sup>7b</sup>, R<sup>8a</sup>, and R<sup>8b</sup> are each H.
- 89. The process of claim 65 wherein R<sup>3</sup> and R<sup>6</sup> are each H.
- 90. The process of claim 65 wherein R<sup>3</sup>, R<sup>5</sup>, and R<sup>6</sup> are each H.

- 91. The process of claim 65 wherein  $R^4$  is halo.
- 92. The process of claim 65 wherein  $R^4$  is Cl.
- 93. The process of claim 65 wherein  $R^2$  is  $C_1$ - $C_4$  alkyl.
- 94. The process of claim 65 wherein  $R^2$  is methyl.
- 95. The process of claim 65 wherein R<sup>1</sup> is H.
- 96. The process of claim 65 wherein  $R^1$  is H or  $C_1$ - $C_4$  alkyl,  $R^2$  is  $C_1$ - $C_4$  alkyl,  $R^3$  is H,  $R^4$  is halo,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 97. The process of claim 65 wherein  $R^1$  is H,  $R^2$  is Me,  $R^3$  is H,  $R^4$  is Cl,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 98. The process of claim 65 wherein said compound of Formula I has an S configuration at the carbon bearing  $R^2$ .
- 99. The process of claim 65 wherein said compound of Formula I has an R configuration at the carbon bearing  $R^2$ .
- 100. A process for preparing a compound of Formula I:

or salt form thereof,

wherein:

R<sup>1</sup> is H or C<sub>1</sub>-C<sub>8</sub> alkyl;

 $R^2$  is  $C_1$ - $C_8$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), -C(O)NH-( $C_1$ - $C_8$  alkyl), OH,  $C_1$ - $C_4$  haloalkyl, or CH<sub>2</sub>OH;

R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>2</sub>-C<sub>8</sub> alkenyl, C<sub>2</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, hydroxy, mercapto, OR<sup>9</sup>, SR<sup>9</sup>, alkoxyalkyl, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, hydroxyalkyl, NR<sup>10</sup>R<sup>11</sup>, CN, NO<sub>2</sub>, heterocycloalkyl, aryl, or heteroaryl, wherein said aryl and heteroaryl can be substituted with one or more substituents selected from C<sub>1</sub>-C<sub>8</sub> alkyl, halo, C<sub>1</sub>-C<sub>8</sub> haloalkyl, and alkoxy; or R<sup>4</sup> and R<sup>5</sup> together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

 $R^{7a}$  and  $R^{7b}$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or hydroxyalkyl, or  $R^{7a}$  and  $R^{7b}$  together with the carbon atom to which they are attached form a  $C_3$ - $C_7$  cycloalkyl group;

 $R^{8a}$  and  $R^{8b}$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or hydroxyalkyl, or  $R^{8a}$  and  $R^{8b}$  together with the carbon atom to which they are attached form a  $C_3$ - $C_7$  cycloalkyl group;

 $R^9$  is H,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl; and

 $R^{10}$  and  $R^{11}$  are each, independently, H,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl, or  $R^{10}$  and  $R^{11}$  together with the N atom to which they are attached form a heterocyclic ring; comprising:

# (a) reacting a compound of Formula IV:

or salt form thereof, with a compound of Formula:

$$Q \xrightarrow{Q} L$$

wherein:

L is halo, hydroxy,  $C_1$ - $C_8$  alkoxy,  $C_1$ - $C_8$  thioalkoxy,  $C_1$ - $C_8$  acyloxy, -OSO<sub>2</sub>R, or -OSi(R')<sub>3</sub>;

R is  $C_1$ - $C_8$  alkyl, aryl, or heteroaryl each optionally substituted by one or more halo, cyano, nitro,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  haloalkyl,  $C_1$ - $C_4$  alkoxy, or  $C_1$ - $C_4$  haloalkoxy;

R' is C<sub>1</sub>-C<sub>8</sub> alkyl; and

Q is a leaving group,

for a time and under conditions suitable for forming a compound of Formula III:

$$R^4$$
 $R^5$ 
 $R^{7b}$ 
 $R^{7a}$ 
 $R^7a$ 
 $R^2$ 
 $R^6$ 
 $R^{8b}$ 
 $R^{8a}$ 
 $R^8$ 
 $R^8$ 

or salt form thereof;

(b) reacting said compound of Formula III or salt form thereof, with a cyclizing reagent for a time and under conditions suitable for forming a compound of Formula II:

or salt form thereof; and

- (c) reacting said compound of Formula II with a reducing agent optionally in the presence of a Lewis acid for a time and under conditions suitable for forming said compound of Formula I or salt form thereof.
- 101. The process of claim 100 wherein Q is hydroxy, alkoxy, halo, or  $O(CO)R^Q$ , wherein  $R^Q$  is  $C_1$ - $C_8$  alkyl,  $C_3$ - $C_7$  cycloalkyl, aryl, heteroaryl, or heterocycloalkyl.
- 102. The process of claim 100 wherein Q is halo.
- 103. The process of claim 100 wherein Q is Cl.
- 104. The process of claim 100 wherein then reacting of step (a) is carried out in the presence of base.

<b>WO 2</b> 005/019179	PCT/US2004/01927
<b>WO 2005/019179</b>	PCT/US2004/01

- 105. The process of claim 100 wherein said cyclizing reagent comprises a Lewis acid.
- 106. The process of claim 100 wherein said cyclizing reagent comprises a C<sub>1</sub>-C<sub>8</sub> alkyl aluminum halide.
- 107. The process of claim 100 wherein said cyclizing reagent comprises a C<sub>2</sub>-C<sub>16</sub> dialkyl aluminum halide.
- 108. The process of claim 100a wherein said cyclizing reagent comprises AlCl<sub>3</sub>.
- 109. The process of claim 100 wherein said cyclizing reagent comprises an acid.
- 110. The process of claim 100 wherein said cyclizing reagent comprises sulfuric acid.
- 111. The process of claim 100 wherein said reacting of step b) is carried out in the absence of solvent.
- 112. The process of claim 100 wherein said reacting of step b) is carried out in the presence of solvent.
- 113. The process of claim 100 wherein said reacting of step b) is carried out in a non-polar solvent.
- 114. The process of claim 100 wherein said reacting of step b) is carried out in a solvent comprising decahydronaphthalene or 1,2-dichlorobenzene.
- 115. The process of claim 100 wherein said reducing agent comprises a borane.
- 116. The process of claim 100 wherein said reducing agent comprises BH<sub>3</sub>.
- 117. The process of claim 100 wherein said reducing agent comprises a metal hydride.
- 118. The process of claim 100 wherein said reducing agent comprises a borohydride or aluminum hydride.
- 119. The process of claim 100 wherein:
- $R^2$  is  $C_1$ - $C_8$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), -C(O)NH-( $C_1$ - $C_8$  alkyl), OH, or CH<sub>2</sub>OH;

R<sup>3</sup> and R<sup>6</sup> are each H;

R<sup>4</sup> and R<sup>5</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>8</sub> haloalkyl, hydroxy, OR<sup>9</sup>, SR<sup>9</sup>, alkoxyalkyl, NHR<sup>10</sup>, NR<sup>10</sup>R<sup>11</sup>, aryl, or heteroaryl, wherein said aryl can be substituted with up to two substituents

selected from  $C_1$ - $C_8$  alkyl, halo,  $C_1$ - $C_8$  haloalkyl, and alkoxy, and said heteroaryl can be optionally substituted with up to two substituents selected from halogen and  $C_1$ - $C_8$  alkyl; or  $R^4$  and  $R^5$  together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

R<sup>7a</sup> is H;

R7b is H or C1-C8 alkyl;

R<sup>8a</sup> and R<sup>8b</sup> are each H; and

 $R^{10}$  and  $R^{11}$  are each, independently,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  haloalkyl, aryl, heteroaryl, aralkyl, heteroarylalkyl, or allyl;

provided that:

- (A) if R<sup>2</sup> is methyl and R<sup>4</sup> is H, then R<sup>5</sup> is not thiazole, substituted thiazole or a thiazole derivative;
  - (B) if R<sup>7a</sup> is H and R<sup>7b</sup> is other than H, then neither R<sup>4</sup> nor R<sup>5</sup> can be H;
  - (C) if R<sup>1</sup> and R<sup>2</sup> are methyl, and R<sup>5</sup> is H then R<sup>4</sup> is not NHR<sup>10</sup> or NR<sup>10</sup>R<sup>11</sup>; and
- (D) if  $R^1$  and  $R^2$  are methyl and  $R^5$  is H, then  $R^4$  is not imidazolyl, substituted imidazolyl, or an imidazole derivative.
- 120. The process of claim 119 wherein R<sup>2</sup> is methyl, ethyl, n-propyl, or isopropyl.
- 121. The process of claim 119 wherein R<sup>2</sup> is methyl.
- 122. The process of claim 119 wherein R<sup>4</sup> is Cl, Br, haloalkyl, CF<sub>3</sub>, thiophenyl, furanyl, pyrrolyl, pyrazolyl, or imidazolyl.
- 123. The process of claim 119 wherein R<sup>4</sup> is Cl.
- 124. The process of claim 119 wherein  $R^5$  is methoxy, ethoxy, n-propoxy, isopropoxy, allyloxy, thiophenyl, furanyl, pyrrolyl, pyrazolyl, imidazolyl, or phenyl, wherein said imidazolyl is optionally substituted by one or more halo or methyl and said phenyl is optionally substituted with up to two substituents selected from  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  haloalkyl, halo, and alkoxy.
- 125. The process of claim 119 wherein R<sup>5</sup> is H.
- 126. The process of claim 100 wherein:

 $R^2$  is  $C_1$ - $C_4$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_4$  alkyl),  $C_1$ - $C_4$  haloalkyl, or CH<sub>2</sub>OH;

R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>4</sub> alkyl, C<sub>1</sub>-C<sub>4</sub> haloalkyl, hydroxy, NH<sub>2</sub>, CN, or NO<sub>2</sub>; and

R<sup>7a</sup>, R<sup>7b</sup>, R<sup>8a</sup>, and R<sup>8b</sup> are each H; provided that:

(H) when R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl, -CH<sub>2</sub>-O-(C<sub>1</sub>-C<sub>4</sub> alkyl), or CH<sub>2</sub>OH, then R<sup>3</sup> and R<sup>6</sup> are not both H; and

- (I) when R<sup>2</sup> is CH<sub>3</sub>, then R<sup>3</sup>, R<sup>4</sup>, and R<sup>6</sup> are each H and R<sup>5</sup> is not H or isopropyl.
- 127. The process of claim 100 wherein R<sup>7a</sup>, R<sup>7b</sup>, R<sup>8a</sup>, and R<sup>8b</sup> are each H.
- 128. The process of claim 100 wherein R<sup>3</sup> and R<sup>6</sup> are each H.
- 129. The process of claim 100 wherein R<sup>3</sup>, R<sup>5</sup>, and R<sup>6</sup> are each H.
- 130. The process of claim 100 wherein R<sup>4</sup> is halo.
- 131. The process of claim 100 wherein R<sup>4</sup> is Cl.
- 132. The process of claim 100 wherein  $R^2$  is  $C_1$ - $C_4$  alkyl.
- 133. The process of claim 100 wherein  $R^2$  is methyl.
- 134. The process of claim 100 wherein R<sup>1</sup> is H.
- 135. The process of claim 100 wherein  $R^1$  is H or  $C_1$ - $C_4$  alkyl,  $R^2$  is  $C_1$ - $C_4$  alkyl,  $R^3$  is H,  $R^4$  is halo,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 136. The process of claim 100 wherein  $R^1$  is H,  $R^2$  is Me,  $R^3$  is H,  $R^4$  is Cl,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 137. The process of claim 100 wherein said compound of Formula I has an S configuration at the carbon bearing  $\mathbb{R}^2$ .
- 138. The process of claim 100 wherein said compound of Formula I has an R configuration at the carbon bearing  $R^2$ .
- 139. A process for preparing a compound of Formula I:

or salt form thereof, wherein:

R1 is H or C1-C8 alkyl;

 $R^2$  is  $C_1\text{-}C_8$  alkyl, -CH2-O-(C1-C8 alkyl), C(O)O-(C1-C8 alkyl), -C(O)NH-(C1-C8 alkyl), OH, C1-C4 haloalkyl, or CH2OH;

 $R^3$ ,  $R^4$ ,  $R^5$ , and  $R^6$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, hydroxy, mercapto,  $OR^9$ ,  $SR^9$ , alkoxyalkyl, C(O)-alkyl, C(O)-alkyl, C(O)-alkyl, hydroxyalkyl,  $NR^{10}R^{11}$ , CN,  $NO_2$ , heterocycloalkyl, aryl, or heteroaryl, wherein said aryl and heteroaryl can be substituted with one or more substituents selected from  $C_1$ - $C_8$  alkyl, halo,  $C_1$ - $C_8$  haloalkyl, and alkoxy; or  $R^4$  and  $R^5$  together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

 $R^{7a}$  and  $R^{7b}$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or hydroxyalkyl, or  $R^{7a}$  and  $R^{7b}$  together with the carbon atom to which they are attached form a  $C_3$ - $C_7$  cycloalkyl group;

 $R^{8a}$  and  $R^{8b}$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or hydroxyalkyl, or  $R^{8a}$  and  $R^{8b}$  together with the carbon atom to which they are attached form a  $C_3$ - $C_7$  cycloalkyl group;

 $R^9$  is H,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl; and

 $R^{10}$  and  $R^{11}$  are each, independently, H,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl, or  $R^{10}$  and  $R^{11}$  together with the N atom to which they are attached form a heterocyclic ring; comprising reacting a compound of Formula IIIa:

$$R^{4}$$
 $R^{5}$ 
 $R^{7b}$ 
 $R^{7a}$ 
 $R^{8a}$ 
 $R^{8a}$ 
 $R^{8a}$ 
 $R^{8a}$ 
 $R^{8a}$ 

wherein:

L is halo, hydroxy,  $C_1$ - $C_8$  alkoxy,  $C_1$ - $C_8$  thioalkoxy,  $C_1$ - $C_8$  acyloxy, -OSO<sub>2</sub>R, or -OSi(R')<sub>3</sub>;

R is  $C_1$ - $C_8$  alkyl, aryl, or heteroaryl each optionally substituted by one or more halo, cyano, nitro,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  haloalkyl,  $C_1$ - $C_4$  alkoxy, or  $C_1$ - $C_4$  haloalkoxy; and

R' is  $C_1$ - $C_8$  alkyl;

with a cyclizing reagent for a time and under conditions suitable for forming said compound of Formula I.

- 140. The process of claim 139 wherein said cyclizing reagent comprises a Lewis acid.
- 141. The process of claim 139 wherein said cyclizing reagent comprises a C<sub>1</sub>-C<sub>8</sub> alkyl aluminum halide.
- 142. The process of claim 139 wherein said cyclizing reagent comprises a  $C_2$ - $C_{16}$  dialkyl aluminum halide.
- 143. The process of claim 139 wherein said cyclizing reagent comprises AlCl<sub>3</sub>.
- 144. The process of claim 139 wherein said cyclizing reagent comprises an acid.
- 145. The process of claim 139 wherein said cyclizing reagent comprises sulfuric acid.
- 146. The process of claim 139 wherein said reacting is carried out in the absence of solvent.
- 147. The process of claim 139 wherein said reacting is carried out in the presence of solvent.
- 148. The process of claim 139 wherein said reacting is carried out in a non-polar solvent.
- 149. The process of claim 139 wherein said reacting is carried out in a solvent comprising decahydronaphthalene or 1,2-dichlorobenzene.

150. The process of claim 139 wherein said reacting is carried out at elevated temperature.

151. The process of claim 139 wherein:

 $R^2$  is  $C_1$ - $C_8$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), -C(O)NH-( $C_1$ - $C_8$  alkyl), OH, or CH<sub>2</sub>OH;

R<sup>3</sup> and R<sup>6</sup> are each H;

 $R^4$  and  $R^5$  are each, independently, H, halo,  $C_1$ - $C_8$  haloalkyl, hydroxy,  $OR^9$ ,  $SR^9$ , alkoxyalkyl, NHR<sup>10</sup>, NR<sup>10</sup>R<sup>11</sup>, aryl, or heteroaryl, wherein said aryl can be substituted with up to two substituents selected from  $C_1$ - $C_8$  alkyl, halo,  $C_1$ - $C_8$  haloalkyl, and alkoxy, and said heteroaryl can be optionally substituted with up to two substituents selected from halogen and  $C_1$ - $C_8$  alkyl; or  $R^4$  and  $R^5$  together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

R<sup>7a</sup> is H;

R<sup>7b</sup> is H or C<sub>1</sub>-C<sub>8</sub> alkyl;

R<sup>8a</sup> and R<sup>8b</sup> are each H; and

 $R^{10}$  and  $R^{11}$  are each, independently,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  haloalkyl, aryl, heteroaryl, aralkyl, heteroarylalkyl, or allyl;

provided that:

- (A) if R<sup>2</sup> is methyl and R<sup>4</sup> is H, then R<sup>5</sup> is not thiazole, substituted thiazole or a thiazole derivative;
  - (B) if R<sup>7a</sup> is H and R<sup>7b</sup> is other than H, then neither R<sup>4</sup> nor R<sup>5</sup> can be H;
  - (C) if  $R^1$  and  $R^2$  are methyl, and  $R^5$  is H then  $R^4$  is not NHR<sup>10</sup> or NR<sup>10</sup>R<sup>11</sup>; and
- (D) if  $R^1$  and  $R^2$  are methyl and  $R^5$  is H, then  $R^4$  is not imidazolyl, substituted imidazolyl, or an imidazole derivative.
- 152. The process of claim 151 wherein R<sup>1</sup> is H.
- 153. The process of claim 151 wherein R<sup>1</sup> is C<sub>1</sub>-C<sub>8</sub> alkyl.
- 154. The process of claim 151 wherein R<sup>2</sup> is methyl, ethyl, n-propyl, or isopropyl.
- 155. The process of claim 151 wherein  $R^2$  is methyl.
- 156. The process of claim 151 wherein R<sup>4</sup> is Cl, Br, haloalkyl, CF<sub>3</sub>, thiophenyl, furanyl, pyrrolyl, pyrazolyl, or imidazolyl.
- 157. The process of claim 151 wherein R<sup>4</sup> is Cl.

158. The process of claim 151 wherein R<sup>5</sup> is methoxy, ethoxy, n-propoxy, isopropoxy, allyloxy, thiophenyl, furanyl, pyrrolyl, pyrazolyl, imidazolyl, or phenyl, wherein said imidazolyl is optionally substituted by one or more halo or methyl and said phenyl is optionally substituted with up to two substituents selected from C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, halo, and alkoxy.

- 159. The process of claim 151 wherein R<sup>5</sup> is H.
- 160. The process of claim 139 wherein:

 $R^2$  is  $C_1$ - $C_4$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_4$  alkyl),  $C_1$ - $C_4$  haloalkyl, or CH<sub>2</sub>OH;

R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>4</sub> alkyl, C<sub>1</sub>-C<sub>4</sub> haloalkyl, hydroxy, NH<sub>2</sub>, CN, or NO<sub>2</sub>; and

R<sup>7a</sup>, R<sup>7b</sup>, R<sup>8a</sup>, and R<sup>8b</sup> are each H; provided that:

- (H) when  $R^2$  is  $C_1$ - $C_4$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_4$  alkyl), or CH<sub>2</sub>OH, then  $R^3$  and  $R^6$  are not both H; and
  - (I) when R<sup>2</sup> is CH<sub>3</sub>, then R<sup>3</sup>, R<sup>4</sup>, and R<sup>6</sup> are each H and R<sup>5</sup> is not H or isopropyl.
- 161. The process of claim 160 wherein R<sup>1</sup> is H.
- 162. The process of claim 160 wherein R<sup>1</sup> is C<sub>1</sub>-C<sub>8</sub> alkyl.
- 163. The process of claim 160 wherein R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl or C<sub>1</sub>-C<sub>4</sub> haloalkyl.
- 164. The process of claim 160 wherein R<sup>2</sup> is methyl, ethyl, isopropyl, n-butyl, or CF<sub>3</sub>.
- 165. The process of claim 160 wherein R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, methyl, NH<sub>2</sub>, CN, halo, CF<sub>3</sub>, NO<sub>2</sub>, or OH.
- 166. The process of claim 139 wherein R<sup>7a</sup>, R<sup>7b</sup>, R<sup>8a</sup>, and R<sup>8b</sup> are each H.
- 167. The process of claim 139 wherein R<sup>3</sup> and R<sup>6</sup> are each H.
- 168. The process of claim 139 wherein R<sup>3</sup>, R<sup>5</sup>, and R<sup>6</sup> are each H.
- 169. The process of claim 139 wherein R<sup>4</sup> is halo.
- 170. The process of claim 139 wherein  $R^4$  is Cl.

- 171. The process of claim 139 wherein  $R^2$  is  $C_1$ - $C_4$  alkyl.
- 172. The process of claim 139 wherein  $R^2$  is methyl.
- 173. The process of claim 139 wherein R<sup>1</sup> is H.
- 174. The process of claim 139 wherein  $R^1$  is H or  $C_1$ - $C_4$  alkyl,  $R^2$  is  $C_1$ - $C_4$  alkyl,  $R^3$  is H,  $R^4$  is halo,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 175. The process of claim 139 wherein  $R^1$  is H,  $R^2$  is Me,  $R^3$  is H,  $R^4$  is Cl,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 176. A process for preparing a compound of Formula IIIa:

$$R^{4}$$
 $R^{7b}$ 
 $R^{7a}$ 
 $R^{5}$ 
 $R^{8a}$ 
 $R^{8a}$ 
 $R^{8a}$ 
 $R^{8a}$ 
 $R^{8a}$ 
 $R^{8a}$ 

or salt form thereof, wherein:

 $R^1$  is H or  $C_1$ - $C_8$  alkyl;

 $R^2$  is  $C_1$ - $C_8$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), -C(O)NH-( $C_1$ - $C_8$  alkyl), OH,  $C_1$ - $C_4$  haloalkyl, or CH<sub>2</sub>OH;

 $R^3$ ,  $R^4$ ,  $R^5$ , and  $R^6$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, hydroxy, mercapto,  $OR^9$ ,  $SR^9$ , alkoxyalkyl, C(O)-alkyl, C(O)-alkyl, C(O)-alkyl, hydroxyalkyl,  $NR^{10}R^{11}$ , CN,  $NO_2$ , heterocycloalkyl, aryl, or heteroaryl, wherein said aryl and heteroaryl can be substituted with one or more substituents selected from  $C_1$ - $C_8$  alkyl, halo,  $C_1$ - $C_8$  haloalkyl, and alkoxy; or  $R^4$  and  $R^5$  together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

 $R^{7a}$  and  $R^{7b}$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or hydroxyalkyl, or  $R^{7a}$  and  $R^{7b}$  together with the carbon atom to which they are attached form a  $C_3$ - $C_7$  cycloalkyl group;

 $R^{8a}$  and  $R^{8b}$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or

WO 2005/019179 PCT/US2004/019279 hydroxyalkyl, or R<sup>8a</sup> and R<sup>8b</sup> together with the carbon atom to which they are attached form a C<sub>3</sub>-C<sub>7</sub>

cycloalkyl group;

 $R^9$  is H,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloaikyl,  $C_1$ - $C_8$  haloaikyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl;

 $R^{10}$  and  $R^{11}$  are each, independently, H,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl, or  $R^{10}$  and  $R^{11}$  together with the N atom to which they are attached form a heterocyclic ring;

L is halo, hydroxy,  $C_1$ - $C_8$  alkoxy,  $C_1$ - $C_8$  thioalkoxy,  $C_1$ - $C_8$  acyloxy, -OSO<sub>2</sub>R, or -OSi(R')<sub>3</sub>;

R is  $C_1$ - $C_8$  alkyl, aryl, or heteroaryl each optionally substituted by one or more halo, cyano, nitro,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  haloalkyl,  $C_1$ - $C_4$  alkoxy, or  $C_1$ - $C_4$  haloalkoxy; and

R' is C<sub>1</sub>-C<sub>8</sub> alkyl;

comprising reacting a compound of Formula III:

$$R^{4}$$
 $R^{5}$ 
 $R^{6}$ 
 $R^{8b}$ 
 $R^{8a}$ 
 $R^{1}$ 
 $R^{2}$ 
 $R^{2}$ 

with a reducing agent optionally in the presence of a Lewis acid for a time and under conditions suitable for forming said compound of Formula IIIa.

- 177. The process of claim 176 wherein the stereochemistry of chiral centers present in said compound of Formula IIIa is retained in said compound of Formula III.
- 178. The process of claim 176 wherein said reducing agent comprises a borane.
- 179. The process of claim 176 wherein said reducing agent comprises BH<sub>3</sub>.
- 180. The process of claim 176 wherein said reducing agent comprises a metal hydride.
- 181. The process of claim 176 wherein said reducing agent comprises a borohydride or aluminum hydride.
- 182. The process of claim 176 wherein:

WO 2005/019179 PCT/US2004/0192/9
R<sup>2</sup> is C<sub>1</sub>-C<sub>8</sub> alkyl, -CH<sub>2</sub>-O-(C<sub>1</sub>-C<sub>8</sub> alkyl), C(O)O-(C<sub>1</sub>-C<sub>8</sub> alkyl), -C(O)NH-(C<sub>1</sub>-C<sub>8</sub> alkyl), OH, or CH<sub>2</sub>OH;

R<sup>3</sup> and R<sup>6</sup> are each H:

R<sup>4</sup> and R<sup>5</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>8</sub> haloalkyl, hydroxy, OR<sup>9</sup>, SR<sup>9</sup>, alkoxyalkyl, NHR<sup>10</sup>, NR<sup>10</sup>R<sup>11</sup>, aryl, or heteroaryl, wherein said aryl can be substituted with up to two substituents selected from C<sub>1</sub>-C<sub>8</sub> alkyl, halo, C<sub>1</sub>-C<sub>8</sub> haloalkyl, and alkoxy, and said heteroaryl can be optionally substituted with up to two substituents selected from halogen and C<sub>1</sub>-C<sub>8</sub> alkyl; or R<sup>4</sup> and R<sup>5</sup> together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

R<sup>7a</sup> is H;

R<sup>7b</sup> is H or C<sub>1</sub>-C<sub>8</sub> alkyl;

R<sup>8a</sup> and R<sup>8b</sup> are each H; and

R<sup>10</sup> and R<sup>11</sup> are each, independently, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>1</sub>-C<sub>8</sub> alkenyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, aryl, heteroaryl, aralkyl, heteroarylalkyl, or allyl;

### provided that:

- if R<sup>2</sup> is methyl and R<sup>4</sup> is H, then R<sup>5</sup> is not thiazole, substituted thiazole or a thiazole (A) derivative;
  - if R<sup>7a</sup> is H and R<sup>7b</sup> is other than H, then neither R<sup>4</sup> nor R<sup>5</sup> can be H; **(B)**
  - if R<sup>1</sup> and R<sup>2</sup> are methyl, and R<sup>5</sup> is H then R<sup>4</sup> is not NHR<sup>10</sup> or NR<sup>10</sup>R<sup>11</sup>; and (C)
- if R<sup>1</sup> and R<sup>2</sup> are methyl and R<sup>5</sup> is H, then R<sup>4</sup> is not imidazolyl, substituted imidazolyl, or (D) an imidazole derivative.
- 183. The process of claim 182 wherein R<sup>1</sup> is H.
- The process of claim 182 wherein R<sup>1</sup> is C<sub>1</sub>-C<sub>8</sub> alkyl. 184.
- The process of claim 182 wherein R<sup>2</sup> is methyl, ethyl, n-propyl, or isopropyl. 185.
- The process of claim 182 wherein R<sup>2</sup> is methyl. 186.
- The process of claim 182 wherein R<sup>4</sup> is Cl, Br, haloalkyl, CF<sub>3</sub>, thiophenyl, furanyl, pyrrolyl, 187. pyrazolyl, or imidazolyl.
- The process of claim 182 wherein R<sup>4</sup> is Cl. 188.
- The process of claim 182 wherein R<sup>5</sup> is methoxy, ethoxy, n-propoxy, isopropoxy, allyloxy, 189. thiophenyl, furanyl, pyrrolyl, pyrazolyl, imidazolyl, or phenyl, wherein said imidazolyl is optionally substituted by one or more halo or methyl and said phenyl is optionally substituted with up to two substituents selected from C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, halo, and alkoxy.

- 190. The process of claim 182 wherein R<sup>5</sup> is H.
- 191. The process of claim 176 wherein:

R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl, -CH<sub>2</sub>-O-(C<sub>1</sub>-C<sub>4</sub> alkyl), C<sub>1</sub>-C<sub>4</sub> haloalkyl, or CH<sub>2</sub>OH;

R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>4</sub> alkyl, C<sub>1</sub>-C<sub>4</sub> haloalkyl, hydroxy, NH<sub>2</sub>, CN, or NO<sub>2</sub>; and

R<sup>7a</sup>, R<sup>7b</sup>, R<sup>8a</sup>, and R<sup>8b</sup> are each H; provided that:

- (H) when  $R^2$  is  $C_1$ - $C_4$  alkyl, - $CH_2$ -O-( $C_1$ - $C_4$  alkyl), or  $CH_2$ OH, then  $R^3$  and  $R^6$  are not both H; and
  - (I) when R<sup>2</sup> is CH<sub>3</sub>, then R<sup>3</sup>, R<sup>4</sup>, and R<sup>6</sup> are each H and R<sup>5</sup> is not H or isopropyl.
- 192. The process of claim 191 wherein R<sup>1</sup> is H.
- 193. The process of claim 191 wherein R<sup>1</sup> is C<sub>1</sub>-C<sub>8</sub> alkyl.
- 194. The process of claim 191 wherein R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl or C<sub>1</sub>-C<sub>4</sub> haloalkyl.
- 195. The process of claim 191 wherein R<sup>2</sup> is methyl, ethyl, isopropyl, n-butyl, or CF<sub>3</sub>.
- 196. The process of claim 191 wherein R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, methyl, NH<sub>2</sub>, CN, halo, CF<sub>3</sub>, NO<sub>2</sub>, or OH.
- 197. The process of claim 176 wherein R<sup>7a</sup>, R<sup>7b</sup>, R<sup>8a</sup>, and R<sup>8b</sup> are each H.
- 198. The process of claim 176 wherein R<sup>3</sup> and R<sup>6</sup> are each H.
- 199. The process of claim 176 wherein R<sup>3</sup>, R<sup>5</sup>, and R<sup>6</sup> are each H.
- 176. The process of claim 176 wherein R<sup>4</sup> is halo.
- 201. The process of claim 176 wherein R<sup>4</sup> is Cl.
- 202. The process of claim 176 wherein  $R^2$  is  $C_1$ - $C_4$  alkyl.
- 203. The process of claim 176 wherein R<sup>2</sup> is methyl.

WO 2005/019179
204. The process of claim 176 wherein R<sup>1</sup> is H.

PCT/US2004/019279

205. The process of claim 176 wherein  $R^1$  is H or  $C_1$ - $C_4$  alkyl,  $R^2$  is  $C_1$ - $C_4$  alkyl,  $R^3$  is H,  $R^4$  is halo,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.

206. The process of claim 176 wherein  $R^1$  is H,  $R^2$  is Me,  $R^3$  is H,  $R^4$  is Cl,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.

207. A process for preparing a compound of Formula I:

$$R^4$$
 $R^5$ 
 $R^6$ 
 $R^{8b}$ 
 $R^{8a}$ 
 $R^{7a}$ 
 $R^{7b}$ 

or salt form thereof,

wherein:

R<sup>1</sup> is H or C<sub>1</sub>-C<sub>8</sub> alkyl;

 $R^2$  is  $C_1$ - $C_8$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), -C(O)NH-( $C_1$ - $C_8$  alkyl), OH,  $C_1$ - $C_4$  haloalkyl, or CH<sub>2</sub>OH;

 $R^3$ ,  $R^4$ ,  $R^5$ , and  $R^6$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, hydroxy, mercapto,  $OR^9$ ,  $SR^9$ , alkoxyalkyl, C(O)-alkyl, C(O)-alkyl, C(O)NH-alkyl, hydroxyalkyl,  $NR^{10}R^{11}$ , CN,  $NO_2$ , heterocycloalkyl, aryl, or heteroaryl, wherein said aryl and heteroaryl can be substituted with one or more substituents selected from  $C_1$ - $C_8$  alkyl, halo,  $C_1$ - $C_8$  haloalkyl, and alkoxy; or  $R^4$  and  $R^5$  together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

 $R^{7a}$  and  $R^{7b}$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or hydroxyalkyl, or  $R^{7a}$  and  $R^{7b}$  together with the carbon atom to which they are attached form a  $C_3$ - $C_7$  cycloalkyl group;

 $R^{8a}$  and  $R^{8b}$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or hydroxyalkyl, or  $R^{8a}$  and  $R^{8b}$  together with the carbon atom to which they are attached form a  $C_3$ - $C_7$  cycloalkyl group;

 $R^9$  is H,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl;

R<sup>10</sup> and R<sup>11</sup> are each, independently, H, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>1</sub>-C<sub>8</sub> alkenyl, C<sub>1</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl, or R<sup>10</sup> and R<sup>11</sup> together with the N atom to which they are attached form a heterocyclic ring; comprising

a) reacting a compound of Formula III:

$$R^{4}$$
 $R^{7b}$ 
 $R^{7a}$ 
 $R^{7a}$ 

wherein:

L is halo, hydroxy,  $C_1$ - $C_8$  alkoxy,  $C_1$ - $C_8$  thioalkoxy,  $C_1$ - $C_8$  acyloxy, -OSO<sub>2</sub>R, or -OSi(R')<sub>3</sub>;

R is  $C_1$ - $C_8$  alkyl, aryl, or heteroaryl each optionally substituted by one or more halo, cyano, nitro,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  haloalkyl,  $C_1$ - $C_4$  alkoxy, or  $C_1$ - $C_4$  haloalkoxy; and

R' is C<sub>1</sub>-C<sub>8</sub> alkyl;

with a reducing agent optionally in the presence of a Lewis acid for a time and under conditions suitable for forming a compound of Formula IIIa:

$$R^{4}$$
 $R^{5}$ 
 $R^{7b}$ 
 $R^{7a}$ 
 $R^{8a}$ 
 $R^{8a}$ 
 $R^{8a}$ 
 $R^{8a}$ 
 $R^{8a}$ 
 $R^{8a}$ 

and

- b) reacting said compound of Formula IIIa with a cyclizing reagent for a time and under conditions suitable for forming said compound of Formula I.
- 208. The process of claim 207 wherein the stereochemistry of chiral centers present in said compound of Formula III is retained.
- 209. The process of claim 207 wherein said reducing agent comprises a borane.

wo	2005/019179	PCT/US2004/019279

- 210. The process of claim 207 wherein said reducing agent comprises BH<sub>3</sub>.
- 211. The process of claim 207 wherein said reducing agent comprises a metal hydride.
- 212. The process of claim 207 wherein said reducing agent comprises a borohydride or aluminum hydride.
- 213. The process of claim 207 wherein said cyclizing reagent comprises a Lewis acid.
- 214. The process of claim 207 wherein said cyclizing reagent comprises a C<sub>1</sub>-C<sub>8</sub> alkyl aluminum halide.
- 215. The process of claim 207 wherein said cyclizing reagent comprises a C<sub>2</sub>-C<sub>16</sub> dialkyl aluminum halide.
- 216. The process of claim 207 wherein said cyclizing reagent comprises AlCl<sub>3</sub>.
- 217. The process of claim 207 wherein said cyclizing reagent comprises an acid.
- 218. The process of claim 207 wherein said cyclizing reagent comprises sulfuric acid.
- 219. The process of claim 207 wherein said reacting of step b) is carried out in the absence of solvent.
- 220. The process of claim 207 wherein said reacting of step b) is carried out in the presence of solvent.
- 221. The process of claim 207 wherein said reacting of step b) is carried out in a non-polar solvent.
- 222. The process of claim 207 wherein said reacting of step b) is carried out in a solvent comprising decahydronaphthalene or 1,2-dichlorobenzene.
- 223. The process of claim 207 wherein:
- $R^2$  is  $C_1$ - $C_8$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), -C(O)NH-( $C_1$ - $C_8$  alkyl), OH, or CH<sub>2</sub>OH;

R<sup>3</sup> and R<sup>6</sup> are each H;

 $R^4$  and  $R^5$  are each, independently, H, halo,  $C_1$ - $C_8$  haloalkyl, hydroxy,  $OR^9$ ,  $SR^9$ , alkoxyalkyl, NHR<sup>10</sup>, NR<sup>10</sup>R<sup>11</sup>, aryl, or heteroaryl, wherein said aryl can be substituted with up to two substituents selected from  $C_1$ - $C_8$  alkyl, halo,  $C_1$ - $C_8$  haloalkyl, and alkoxy, and said heteroaryl can be optionally

substituted with up to two substituents selected from halogen and C<sub>1</sub>-C<sub>8</sub> alkyl; or R<sup>4</sup> and R<sup>5</sup> together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

R<sup>7a</sup> is H:

R<sup>7b</sup> is H or C<sub>1</sub>-C<sub>8</sub> alkyl;

R<sup>8a</sup> and R<sup>8b</sup> are each H; and

 $R^{10}$  and  $R^{11}$  are each, independently,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  haloalkyl, aryl, heteroaryl, aralkyl, heteroarylalkyl, or allyl;

provided that:

- (A) if R<sup>2</sup> is methyl and R<sup>4</sup> is H, then R<sup>5</sup> is not thiazole, substituted thiazole or a thiazole derivative;
  - (B) if R<sup>7a</sup> is H and R<sup>7b</sup> is other than H, then neither R<sup>4</sup> nor R<sup>5</sup> can be H;
  - (C) if  $R^1$  and  $R^2$  are methyl, and  $R^5$  is H then  $R^4$  is not NHR<sup>10</sup> or NR<sup>10</sup>R<sup>11</sup>; and
- (D) if R<sup>1</sup> and R<sup>2</sup> are methyl and R<sup>5</sup> is H, then R<sup>4</sup> is not imidazolyl, substituted imidazolyl, or an imidazole derivative.
- 224. The process of claim 223 wherein  $R^1$  is H.
- 225. The process of claim 223 wherein  $R^1$  is  $C_1$ - $C_8$  alkyl.
- 226. The process of claim 223 wherein R<sup>2</sup> is methyl, ethyl, n-propyl, or isopropyl.
- 227. The process of claim 223 wherein R<sup>2</sup> is methyl.
- 228. The process of claim 223 wherein R<sup>4</sup> is Cl, Br, haloalkyl, CF<sub>3</sub>, thiophenyl, furanyl, pyrrolyl, pyrazolyl, or imidazolyl.
- 229. The process of claim 223 wherein R<sup>4</sup> is Cl.
- 230. The process of claim 223 wherein  $R^5$  is methoxy, ethoxy, n-propoxy, isopropoxy, allyloxy, thiophenyl, furanyl, pyrrolyl, pyrazolyl, imidazolyl, or phenyl, wherein said imidazolyl is optionally substituted by one or more halo or methyl and said phenyl is optionally substituted with up to two substituents selected from  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  haloalkyl, halo, and alkoxy.
- 231. The process of claim 223 wherein R<sup>5</sup> is H.
- 232. The process of claim 207 wherein:

  R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl, -CH<sub>2</sub>-O-(C<sub>1</sub>-C<sub>4</sub> alkyl), C<sub>1</sub>-C<sub>4</sub> haloalkyl, or CH<sub>2</sub>OH;

R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>4</sub> alkyl, C<sub>1</sub>-C<sub>4</sub> haloalkyl, hydroxy, NH<sub>2</sub>, CN, or NO<sub>2</sub>; and

 $R^{7a}$ ,  $R^{7b}$ ,  $R^{8a}$ , and  $R^{8b}$  are each H; provided that:

- (H) when  $R^2$  is  $C_1$ - $C_4$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_4$  alkyl), or CH<sub>2</sub>OH, then  $R^3$  and  $R^6$  are not both H; and
  - (I) when R<sup>2</sup> is CH<sub>3</sub>, then R<sup>3</sup>, R<sup>4</sup>, and R<sup>6</sup> are each H and R<sup>5</sup> is not H or isopropyl.
- 233. The process of claim 232 wherein  $R^1$  is H.
- 234. The process of claim 232 wherein R<sup>1</sup> is C<sub>1</sub>-C<sub>8</sub> alkyl.
- 235. The process of claim 232 wherein R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl or C<sub>1</sub>-C<sub>4</sub> haloalkyl.
- 236. The process of claim 232 wherein R<sup>2</sup> is methyl, ethyl, isopropyl, n-butyl, or CF<sub>3</sub>.
- 237. The process of claim 232 wherein R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, methyl, NH<sub>2</sub>, CN, halo, CF<sub>3</sub>, NO<sub>2</sub>, or OH.
- 238. The process of claim 207 wherein R<sup>7a</sup>, R<sup>7b</sup>, R<sup>8a</sup>, and R<sup>8b</sup> are each H.
- 239. The process of claim 207 wherein R<sup>3</sup> and R<sup>6</sup> are each H.
- 240. The process of claim 207 wherein R<sup>3</sup>, R<sup>5</sup>, and R<sup>6</sup> are each H.
- 241. The process of claim 207 wherein R<sup>4</sup> is halo.
- 242. The process of claim 207 wherein  $R^4$  is Cl.
- 243. The process of claim 207 wherein  $R^2$  is  $C_1$ - $C_4$  alkyl.
- 244. The process of claim 207 wherein  $R^2$  is methyl.
- 245. The process of claim 207 wherein R<sup>1</sup> is H.
- 246. The process of claim 207 wherein  $R^1$  is H or  $C_1$ - $C_4$  alkyl,  $R^2$  is  $C_1$ - $C_4$  alkyl,  $R^3$  is H,  $R^4$  is halo,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.

247. The process of claim 207 wherein  $R^1$  is H,  $R^2$  is Me,  $R^3$  is H,  $R^4$  is Cl,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.

## 248. A process for preparing a compound of Formula I:

or salt form thereof, wherein:

 $R^1$  is H or  $C_1$ - $C_8$  alkyl;

 $R^2$  is  $C_1$ - $C_8$  alkyl, - $CH_2$ -O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), -C(O)NH-( $C_1$ - $C_8$  alkyl), OH,  $C_1$ - $C_4$  haloalkyl, or  $CH_2$ OH;

R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>2</sub>-C<sub>8</sub> alkenyl, C<sub>2</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, hydroxy, mercapto, OR<sup>9</sup>, SR<sup>9</sup>, alkoxyalkyl, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, hydroxyalkyl, NR<sup>10</sup>R<sup>11</sup>, CN, NO<sub>2</sub>, heterocycloalkyl, aryl, or heteroaryl, wherein said aryl and heteroaryl can be substituted with one or more substituents selected from C<sub>1</sub>-C<sub>8</sub> alkyl, halo, C<sub>1</sub>-C<sub>8</sub> haloalkyl, and alkoxy; or R<sup>4</sup> and R<sup>5</sup> together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

 $R^{7a}$  and  $R^{7b}$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or hydroxyalkyl, or  $R^{7a}$  and  $R^{7b}$  together with the carbon atom to which they are attached form a  $C_3$ - $C_7$  cycloalkyl group;

 $R^{8a}$  and  $R^{8b}$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or hydroxyalkyl, or  $R^{8a}$  and  $R^{8b}$  together with the carbon atom to which they are attached form a  $C_3$ - $C_7$  cycloalkyl group;

R<sup>9</sup> is H, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>1</sub>-C<sub>8</sub> alkenyl, C<sub>1</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl;

 $R^{10}$  and  $R^{11}$  are each, independently, H,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl, or  $R^{10}$  and  $R^{11}$  together with the N atom to which they are attached form a heterocyclic ring; comprising:

(a) reacting a compound of Formula IV:

$$R^{4}$$
 $R^{5}$ 
 $R^{6}$ 
 $R^{8b}$ 
 $R^{8a}$ 
 $R^{8a}$ 
 $R^{8a}$ 

or salt form thereof, with a compound of Formula:

$$Q$$
 $L$  $R^2$ 

wherein:

L is halo, hydroxy,  $C_1$ - $C_8$  alkoxy,  $C_1$ - $C_8$  thioalkoxy,  $C_1$ - $C_8$  acyloxy, -OSO<sub>2</sub>R, or -OSi(R')<sub>3</sub>;

R is  $C_1$ - $C_8$  alkyl, aryl, or heteroaryl each optionally substituted by one or more halo, cyano, nitro,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  haloalkyl,  $C_1$ - $C_4$  haloalkyl,  $C_1$ - $C_4$  haloalkoxy;

R' is C<sub>1</sub>-C<sub>8</sub> alkyl; and

Q is a leaving group, for a time and under conditions suitable for forming a compound of Formula III:

$$R^{4}$$
 $R^{7b}$ 
 $R^{7a}$ 
 $R^{7a}$ 

or salt form thereof;

(b) reacting said compound of Formula III with a reducing agent optionally in the presence of a Lewis acid for a time and under conditions suitable for forming a compound of Formula IIIa:

WO 2005/019179

PCT/US2004/019279

$$R^4$$
 $R^5$ 
 $R^{7b}$ 
 $R^{7a}$ 
 $R^2$ 
 $R^6$ 
 $R^{8b}$ 
 $R^{8a}$ 
 $R^{8a}$ 
 $R^{8a}$ 

and

- (c) reacting said compound of Formula IIIa with a cyclizing reagent for a time and under conditions suitable for forming said compound of Formula I.
- 249. The process of claim 248 wherein Q is Cl.
- 250. The process of claim 248 wherein then reacting of step (a) is carried out in the presence of base.
- 251. The process of claim 248 wherein said reducing agent comprises a borane.
- 252. The process of claim 248 wherein said reducing agent comprises BH<sub>3</sub>.
- 253. The process of claim 248 wherein said reducing agent comprises a metal hydride.
- 254. The process of claim 248 wherein said reducing agent comprises a borohydride or aluminum hydride.
- 255. The process of claim 248 wherein said cyclizing reagent comprises a Lewis acid.
- 256. The process of claim 248 wherein said cyclizing reagent comprises a C<sub>1</sub>-C<sub>8</sub> alkyl aluminum halide.
- 257. The process of claim 248 wherein said cyclizing reagent comprises a  $C_2$ - $C_{16}$  dialkyl aluminum halide.
- 258. The process of claim 248a wherein said cyclizing reagent comprises AlCl<sub>3</sub>.
- 259. The process of claim 248 wherein said cyclizing reagent comprises an acid.
- 260. The process of claim 248 wherein said cyclizing reagent comprises sulfuric acid.

261. The process of claim 248 wherein said reacting of step c) is carried out in the absence of solvent.

- 262. The process of claim 248 wherein said reacting of step c) is carried out in the presence of solvent.
- 263. The process of claim 248 wherein said reacting of step c) is carried out in a non-polar solvent.
- 264. The process of claim 248 wherein said reacting of step c) is carried out in a solvent comprising decahydronaphthalene or 1,2-dichlorobenzene.
- 265. The process of claim 248 wherein:

 $R^2$  is  $C_1$ - $C_8$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), -C(O)NH-( $C_1$ - $C_8$  alkyl), OH, or CH<sub>2</sub>OH;

R<sup>3</sup> and R<sup>6</sup> are each H;

 $R^4$  and  $R^5$  are each, independently, H, halo,  $C_1$ - $C_8$  haloalkyl, hydroxy,  $OR^9$ ,  $SR^9$ , alkoxyalkyl,  $NHR^{10}$ ,  $NR^{10}R^{11}$ , aryl, or heteroaryl, wherein said aryl can be substituted with up to two substituents selected from  $C_1$ - $C_8$  alkyl, halo,  $C_1$ - $C_8$  haloalkyl, and alkoxy, and said heteroaryl can be optionally substituted with up to two substituents selected from halogen and  $C_1$ - $C_8$  alkyl; or  $R^4$  and  $R^5$  together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

R<sup>7a</sup> is H:

R<sup>7b</sup> is H or C<sub>1</sub>-C<sub>8</sub> alkyl:

R<sup>8a</sup> and R<sup>8b</sup> are each H; and

 $R^{10}$  and  $R^{11}$  are each, independently,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  haloalkyl, aryl, heteroaryl, aralkyl, heteroarylalkyl, or allyl;

provided that:

- (A) if  $R^2$  is methyl and  $R^4$  is H, then  $R^5$  is not thiazole, substituted thiazole or a thiazole derivative;
  - (B) if R<sup>7a</sup> is H and R<sup>7b</sup> is other than H, then neither R<sup>4</sup> nor R<sup>5</sup> can be H;
  - (C) if  $R^1$  and  $R^2$  are methyl, and  $R^5$  is H then  $R^4$  is not NHR<sup>10</sup> or NR<sup>10</sup>R<sup>11</sup>; and
- (D) if R<sup>1</sup> and R<sup>2</sup> are methyl and R<sup>5</sup> is H, then R<sup>4</sup> is not imidazolyl, substituted imidazolyl, or an imidazole derivative.
- 266. The process of claim 265 wherein R<sup>1</sup> is H.
- 267. The process of claim 265 wherein R<sup>1</sup> is C<sub>1</sub>-C<sub>8</sub> alkyl.
- 268. The process of claim 265 wherein R<sup>2</sup> is methyl, ethyl, n-propyl, or isopropyl.

- 269. The process of claim 265 wherein R<sup>2</sup> is methyl.
- 270. The process of claim 265 wherein R<sup>4</sup> is Cl, Br, haloalkyl, CF<sub>3</sub>, thiophenyl, furanyl, pyrrolyl, pyrazolyl, or imidazolyl.
- 271. The process of claim 265 wherein R<sup>4</sup> is Cl.
- 272. The process of claim 265 wherein  $R^5$  is methoxy, ethoxy, n-propoxy, isopropoxy, allyloxy, thiophenyl, furanyl, pyrrolyl, pyrazolyl, imidazolyl, or phenyl, wherein said imidazolyl is optionally substituted by one or more halo or methyl and said phenyl is optionally substituted with up to two substituents selected from  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  haloalkyl, halo, and alkoxy.
- 273. The process of claim 265 wherein R<sup>5</sup> is H.
- 274. The process of claim 248 wherein:

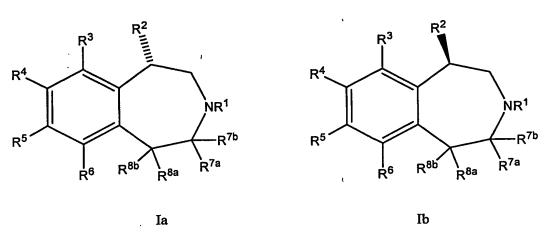
 $R^2$  is  $C_1$ - $C_4$  alkyl, - $CH_2$ -O-( $C_1$ - $C_4$  alkyl),  $C_1$ - $C_4$  haloalkyl, or  $CH_2$ OH;

 $R^3$ ,  $R^4$ ,  $R^5$ , and  $R^6$  are each, independently, H, halo,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  haloalkyl, hydroxy,  $NH_2$ , CN, or  $NO_2$ ; and

R<sup>7a</sup>, R<sup>7b</sup>, R<sup>8a</sup>, and R<sup>8b</sup> are each H; provided that:

- (H) when R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl, -CH<sub>2</sub>-O-(C<sub>1</sub>-C<sub>4</sub> alkyl), or CH<sub>2</sub>OH, then R<sup>3</sup> and R<sup>6</sup> are not both H; and
  - (I) when R<sup>2</sup> is CH<sub>3</sub>, then R<sup>3</sup>, R<sup>4</sup>, and R<sup>6</sup> are each H and R<sup>5</sup> is not H or isopropyl.
- 275. The process of claim 274 wherein  $R^1$  is H.
- 276. The process of claim 274 wherein R<sup>1</sup> is C<sub>1</sub>-C<sub>8</sub> alkyl.
- 277. The process of claim 274 wherein R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl or C<sub>1</sub>-C<sub>4</sub> haloalkyl.
- 278. The process of claim 274 wherein  $R^2$  is methyl, ethyl, isopropyl, n-butyl, or  $CF_3$ .
- 279. The process of claim 274 wherein R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, methyl, NH<sub>2</sub>, CN, halo, CF<sub>3</sub>, NO<sub>2</sub>, or OH.
- 280. The process of claim 248 wherein  $R^{7a}$ ,  $R^{7b}$ ,  $R^{8a}$ , and  $R^{8b}$  are each H.
- 281. The process of claim 248 wherein R<sup>3</sup> and R<sup>6</sup> are each H.

- 282. The process of claim 248 wherein R<sup>3</sup>, R<sup>5</sup>, and R<sup>6</sup> are each H.
- 283. The process of claim 248 wherein R<sup>4</sup> is halo.
- 284. The process of claim 248 wherein R<sup>4</sup> is Cl.
- 285. The process of claim 248 wherein  $R^2$  is  $C_1$ - $C_4$  alkyl.
- 286. The process of claim 248 wherein  $R^2$  is methyl.
- 287. The process of claim 248 wherein R<sup>1</sup> is H.
- 288. The process of claim 248 wherein  $R^1$  is H or  $C_1$ - $C_4$  alkyl,  $R^2$  is  $C_1$ - $C_4$  alkyl,  $R^3$  is H,  $R^4$  is halo,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 289. The process of claim 248 wherein  $R^1$  is H,  $R^2$  is Me,  $R^3$  is H,  $R^4$  is Cl,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 290. A method of resolving a mixture of compounds of Formula Ia and Ib:



wherein:

 $R^1$  is H or  $C_1$ - $C_8$  alkyl;

 $R^2$  is  $C_1$ - $C_8$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), -C(O)NH-( $C_1$ - $C_8$  alkyl), OH,  $C_1$ - $C_4$  haloalkyl, or CH<sub>2</sub>OH;

R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>2</sub>-C<sub>8</sub> alkenyl, C<sub>2</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, hydroxy, mercapto, OR<sup>9</sup>, SR<sup>9</sup>, alkoxyalkyl, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, hydroxyalkyl, NR<sup>10</sup>R<sup>11</sup>, CN, NO<sub>2</sub>, heterocycloalkyl, aryl, or heteroaryl, wherein said aryl and heteroaryl can be substituted with one or more substituents selected from C<sub>1</sub>-C<sub>8</sub> alkyl, halo, C<sub>1</sub>-C<sub>8</sub>

WO 2005/019179 PCT/USZ004/0192/9 haloalkyl, and alkoxy; or  $\mathbb{R}^4$  and  $\mathbb{R}^5$  together with the atoms to which they are attached form a 5- or 6member heterocyclic ring having one O atom;

R<sup>78</sup> and R<sup>7b</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>2</sub>-C<sub>8</sub> alkenyl, C<sub>2</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C1-C8 haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or hydroxvalkyl, or R<sup>7a</sup> and R<sup>7b</sup> together with the carbon atom to which they are attached form a C<sub>3</sub>-C<sub>7</sub> cycloalkyl group;

R<sup>8a</sup> and R<sup>8b</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>2</sub>-C<sub>8</sub> alkenyl, C<sub>2</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C1-C8 haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or hydroxyalkyl, or R<sup>8a</sup> and R<sup>8b</sup> together with the carbon atom to which they are attached form a C<sub>2</sub>-C<sub>7</sub> cycloalkyl group;

R<sup>9</sup> is H, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>1</sub>-C<sub>8</sub> alkenyl, C<sub>1</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl;

 $R^{10}$  and  $R^{11}$  are each, independently, H,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  alkynyl,  $C_3$ - $C_7$ cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl, or R<sup>10</sup> and R<sup>11</sup> together with the N atom to which they are attached form a heterocyclic ring; comprising:

contacting said mixture of compounds with a chiral resolving acid to form chiral resolving acid salts of said compounds, wherein said chiral resolving acid comprises substantially one stereoisomer; and precipitating said chiral resolving acid salts of said compounds, wherein the resulting precipitate is enriched in the chiral resolving acid salt of one of said compounds of Formula Ia or Ib.

- 291. The method of claim 290 wherein said chiral resolving acid is tartaric acid.
- 292. The method of claim 290 wherein said tartaric acid is L-(+)-tartaric acid.
- 293. The method of claim 290 wherein said precipitate is enriched in the tartaric acid salt form of said compound of Formula Ia or said compound of Formula Ib.
- 294. The method of claim 290 wherein:

 $R^2$  is  $C_1$ - $C_8$  alkyl, - $CH_2$ -O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), -C(O)NH-( $C_1$ - $C_8$  alkyl), OH, or CH<sub>2</sub>OH;

R<sup>3</sup> and R<sup>6</sup> are each H;

R<sup>4</sup> and R<sup>5</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>8</sub> haloalkyl, hydroxy, OR<sup>9</sup>, SR<sup>9</sup>, alkoxyalkyl, NHR<sup>10</sup>, NR<sup>10</sup>R<sup>11</sup>, aryl, or heteroaryl, wherein said aryl can be substituted with up to two substituents selected from C<sub>1</sub>-C<sub>8</sub> alkyl, halo, C<sub>1</sub>-C<sub>8</sub> haloalkyl, and alkoxy, and said heteroaryl can be optionally substituted with up to two substituents selected from halogen and C<sub>1</sub>-C<sub>8</sub> alkyl; or R<sup>4</sup> and R<sup>5</sup> together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

R<sup>7a</sup> is H:

 $R^{7b}$  is H or  $C_1$ - $C_8$  alkyl;

R<sup>8a</sup> and R<sup>8b</sup> are each H; and

 $R^{10}$  and  $R^{11}$  are each, independently,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  haloalkyl, aryl, heteroaryl, aralkyl, heteroarylalkyl, or allyl;

provided that:

- (A) if R<sup>2</sup> is methyl and R<sup>4</sup> is H, then R<sup>5</sup> is not thiazole, substituted thiazole or a thiazole derivative;
  - (B) if R<sup>7a</sup> is H and R<sup>7b</sup> is other than H, then neither R<sup>4</sup> nor R<sup>5</sup> can be H;
  - (C) if R<sup>1</sup> and R<sup>2</sup> are methyl, and R<sup>5</sup> is H then R<sup>4</sup> is not NHR<sup>10</sup> or NR<sup>10</sup>R<sup>11</sup>; and
- (D) if R<sup>1</sup> and R<sup>2</sup> are methyl and R<sup>5</sup> is H, then R<sup>4</sup> is not imidazolyl, substituted imidazolyl, or an imidazole derivative.
- 295. The method of claim 294 wherein R<sup>2</sup> is methyl, ethyl, n-propyl, or isopropyl.
- 296. The method of claim 294 wherein R<sup>2</sup> is methyl.
- 297. The method of claim 294 wherein R<sup>4</sup> is Cl, Br, haloalkyl, CF<sub>3</sub>, thiophenyl, furanyl, pyrrolyl, pyrazolyl, or imidazolyl.
- 298. The method of claim 294 wherein R<sup>4</sup> is Cl.
- 299. The method of claim 294 wherein  $R^5$  is methoxy, ethoxy, n-propoxy, isopropoxy, allyloxy, thiophenyl, furanyl, pyrrolyl, pyrazolyl, imidazolyl, or phenyl, wherein said imidazolyl is optionally substituted by one or more halo or methyl and said phenyl is optionally substituted with up to two substituents selected from  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  haloalkyl, halo, and alkoxy.
- 300. The method of claim 294 wherein R<sup>5</sup> is H.
- 301. The method of claim 290 wherein:

 $R^2$  is  $C_1$ - $C_4$  alkyl, - $CH_2$ -O-( $C_1$ - $C_4$  alkyl),  $C_1$ - $C_4$  haloalkyl, or  $CH_2$ OH;

R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>4</sub> alkyl, C<sub>1</sub>-C<sub>4</sub> haloalkyl, hydroxy, NH<sub>2</sub>, CN, or NO<sub>2</sub>; and

 $R^{7a}$ ,  $R^{7b}$ ,  $R^{8a}$ , and  $R^{8b}$  are each H; provided that:

- (H) when R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl, -CH<sub>2</sub>-O-(C<sub>1</sub>-C<sub>4</sub> alkyl), or CH<sub>2</sub>OH, then R<sup>3</sup> and R<sup>6</sup> are not both H; and
  - (I) when  $R^2$  is  $CH_3$ , then  $R^3$ ,  $R^4$ , and  $R^6$  are each H and  $R^5$  is not H or isopropyl.

- 302. The method of claim 290 wherein R<sup>7a</sup>, R<sup>7b</sup>, R<sup>8a</sup>, and R<sup>8b</sup> are each H.
- 303. The method of claim 290 wherein R<sup>3</sup> and R<sup>6</sup> are each H.
- 304. The method of claim 290 wherein R<sup>3</sup>, R<sup>5</sup>, and R<sup>6</sup> are each H.
- 305. The method of claim 290 wherein R<sup>4</sup> is halo.
- 306. The method of claim 290 wherein R<sup>4</sup> is Cl.
- 307. The method of claim 290 wherein R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl.
- 308. The method of claim 290 wherein  $\mathbb{R}^2$  is methyl.
- 309. The method of claim 290 wherein R<sup>1</sup> is H.
- 310. The method of claim 290 wherein  $R^1$  is H or  $C_1$ - $C_4$  alkyl,  $R^2$  is  $C_1$ - $C_4$  alkyl,  $R^3$  is H,  $R^4$  is halo,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 311. The method of claim 290 wherein  $R^1$  is H,  $R^2$  is Me,  $R^3$  is H,  $R^4$  is Cl,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 312. The method of claim 290 wherein said contacting is carried out in a solvent comprising t-butanol.
- 313. The method of claim 290 wherein said contacting is carried out in a solvent comprising acetone.
- 314. A compound of Formula II or IIIa:

or salt form thereof,

wherein:

R<sup>1</sup> is H or C<sub>1</sub>-C<sub>8</sub> alkyl;

WO 2005/019179  $R^2$  is  $C_1$ - $C_8$  alkyl, - $CH_2$ -O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), -C(O)NH-( $C_1$ - $C_8$  alkyl), OH,  $C_1$ -C4 haloalkyl, or CH2OH;

R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>2</sub>-C<sub>8</sub> alkenyl, C<sub>2</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, hydroxy, mercapto, OR<sup>9</sup>, SR<sup>9</sup>, alkoxyalkyl, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, hydroxyalkyl, NR<sup>10</sup>R<sup>11</sup>, CN, NO<sub>2</sub>, heterocycloalkyl, aryl, or heteroaryl, wherein said aryl and heteroaryl can be substituted with one or more substituents selected from C<sub>1</sub>-C<sub>8</sub> alkyl, halo, C<sub>1</sub>-C<sub>8</sub> haloalkyl, and alkoxy; or R<sup>4</sup> and R<sup>5</sup> together with the atoms to which they are attached form a 5- or 6member heterocyclic ring having one O atom;

R<sup>7a</sup> and R<sup>7b</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>2</sub>-C<sub>8</sub> alkenyl, C<sub>2</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C1-C8 haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or hydroxyalkyl, or R<sup>7a</sup> and R<sup>7b</sup> together with the carbon atom to which they are attached form a C<sub>3</sub>-C<sub>7</sub> cycloalkyl group;

 $R^{8a}$  and  $R^{8b}$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$ cycloalkyl, C1-C8 haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or hydroxyalkyl, or R8a and R8b together with the carbon atom to which they are attached form a C3-C7 cycloalkyl group;

R<sup>9</sup> is H, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>1</sub>-C<sub>8</sub> alkenyl, C<sub>1</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl;

R<sup>10</sup> and R<sup>11</sup> are each, independently, H, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>1</sub>-C<sub>8</sub> alkenyl, C<sub>1</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl, or R<sup>10</sup> and R<sup>11</sup> together with the N atom to which they are attached form a heterocyclic ring; and

L is halo, hydroxy, C<sub>1</sub>-C<sub>8</sub> alkoxy, C<sub>1</sub>-C<sub>8</sub> thioalkoxy, C<sub>1</sub>-C<sub>8</sub> acyloxy, -OSO<sub>2</sub>R, or -OSi(R')3;

R is C<sub>1</sub>-C<sub>8</sub> alkyl, aryl, or heteroaryl each optionally substituted by one or more halo, cyano, nitro. C<sub>1</sub>-C<sub>4</sub> alkyl, C<sub>1</sub>-C<sub>4</sub> haloalkyl, C<sub>1</sub>-C<sub>4</sub> alkoxy, or C<sub>1</sub>-C<sub>4</sub> haloalkoxy; and

R' is  $C_1$ - $C_8$  alkyl.

### 315. The compound of claim 314 wherein:

 $R^2$  is  $C_1$ - $C_8$  alkyl, - $CH_2$ -O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), -C(O)NH-( $C_1$ - $C_8$  alkyl), OH, or CH<sub>2</sub>OH;

R<sup>3</sup> and R<sup>6</sup> are each H;

R<sup>4</sup> and R<sup>5</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>8</sub> haloalkyl, hydroxy, OR<sup>9</sup>, SR<sup>9</sup>, alkoxyalkyl, NHR<sup>10</sup>, NR<sup>10</sup>R<sup>11</sup>, aryl, or heteroaryl, wherein said aryl can be substituted with up to two substituents selected from C<sub>1</sub>-C<sub>8</sub> alkyl, halo, C<sub>1</sub>-C<sub>8</sub> haloalkyl, and alkoxy, and said heteroaryl can be optionally substituted with up to two substituents selected from halogen and C<sub>1</sub>-C<sub>8</sub> alkyl; or R<sup>4</sup> and R<sup>5</sup> together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

R<sup>7a</sup> is H:

R<sup>7b</sup> is H or C<sub>1</sub>-C<sub>8</sub> alkyl;

PCT/US2004/019279

j

R<sup>8a</sup> and R<sup>8b</sup> are each H; and

 $R^{10}$  and  $R^{11}$  are each, independently,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  haloalkyl, aryl, heteroaryl, aralkyl, heteroarylalkyl, or allyl;

provided that:

- (A) if R<sup>2</sup> is methyl and R<sup>4</sup> is H, then R<sup>5</sup> is not thiazole, substituted thiazole or a thiazole derivative;
  - (B) if R<sup>7a</sup> is H and R<sup>7b</sup> is other than H, then neither R<sup>4</sup> nor R<sup>5</sup> can be H;
  - (C) if R<sup>1</sup> and R<sup>2</sup> are methyl, and R<sup>5</sup> is H then R<sup>4</sup> is not NHR<sup>10</sup> or NR<sup>10</sup>R<sup>11</sup>; and
- (D) if R<sup>1</sup> and R<sup>2</sup> are methyl and R<sup>5</sup> is H, then R<sup>4</sup> is not imidazolyl, substituted imidazolyl, or an imidazole derivative.
- 316. The compound of claim 315 wherein R<sup>2</sup> is methyl, ethyl, n-propyl, or isopropyl.
- 317. The compound of claim 315 wherein  $R^2$  is methyl.
- 318. The compound of claim 315 wherein R<sup>4</sup> is Cl, Br, haloalkyl, CF<sub>3</sub>, thiophenyl, furanyl, pyrrolyl, pyrazolyl, or imidazolyl.
- 319. The compound of claim 315 wherein R<sup>4</sup> is Cl.
- 320. The compound of claim 315 wherein R<sup>5</sup> is methoxy, ethoxy, n-propoxy, isopropoxy, allyloxy, thiophenyl, furanyl, pyrrolyl, pyrazolyl, imidazolyl, or phenyl, wherein said imidazolyl is optionally substituted by one or more halo or methyl and said phenyl is optionally substituted with up to two substituents selected from C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, halo, and alkoxy.
- 321. The compound of claim 315 wherein R<sup>5</sup> is H.
- 322. The compound of claim 314 wherein:

R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl, -CH<sub>2</sub>-O-(C<sub>1</sub>-C<sub>4</sub> alkyl), C<sub>1</sub>-C<sub>4</sub> haloalkyl, or CH<sub>2</sub>OH;

 $R^3$ ,  $R^4$ ,  $R^5$ , and  $R^6$  are each, independently, H, halo,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  haloalkyl, hydroxy,  $NH_2$ , CN, or  $NO_2$ ; and

R<sup>7a</sup>, R<sup>7b</sup>, R<sup>8a</sup>, and R<sup>8b</sup> are each H; provided that:

- (H) when R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl, -CH<sub>2</sub>-O-(C<sub>1</sub>-C<sub>4</sub> alkyl), or CH<sub>2</sub>OH, then R<sup>3</sup> and R<sup>6</sup> are not both H; and
  - (I) when R<sup>2</sup> is CH<sub>3</sub>, then R<sup>3</sup>, R<sup>4</sup>, and R<sup>6</sup> are each H and R<sup>5</sup> is not H or isopropyl.
- 323. The compound of claim 322 wherein R<sup>7a</sup>, R<sup>7b</sup>, R<sup>8a</sup>, and R<sup>8b</sup> are each H.

- 324. The compound of claim 322 wherein  $R^3$  and  $R^6$  are each H.
- 325. The compound of claim 322 wherein R<sup>3</sup>, R<sup>5</sup>, and R<sup>6</sup> are each H.
- 326. The compound of claim 322 wherein R<sup>4</sup> is halo.
- 327. The compound of claim 322 wherein R<sup>4</sup> is Cl.
- 328. The compound of claim 322 wherein  $R^2$  is  $C_1$ - $C_4$  alkyl.
- 329. The compound of claim 322 wherein  $R^2$  is methyl.
- 330. The compound of claim 322 wherein R<sup>1</sup> is H.
- 331. The compound of claim 314 wherein R<sup>7a</sup>, R<sup>7b</sup>, R<sup>8a</sup>, and R<sup>8b</sup> are each H.
- 332. The compound of claim 314 wherein R<sup>3</sup> and R<sup>6</sup> are each H.
- 333. The compound of claim 314 wherein R<sup>3</sup>, R<sup>5</sup>, and R<sup>6</sup> are each H.
- 334. The compound of claim 314 wherein R<sup>4</sup> is halo.
- 335. The compound of claim 314 wherein  $R^4$  is Cl.
- 336. The compound of claim 314 wherein  $R^2$  is  $C_1$ - $C_4$  alkyl.
- 337. The compound of claim 314 wherein  $R^2$  is methyl.
- 338. The compound of claim 314 wherein R<sup>1</sup> is H.
- 339. The compound of claim 314 wherein  $R^1$  is H or  $C_1$ - $C_4$  alkyl,  $R^2$  is  $C_1$ - $C_4$  alkyl,  $R^3$  is H,  $R^4$  is halo,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 340. The compound of claim 314 wherein  $R^1$  is H,  $R^2$  is Me,  $R^3$  is H,  $R^4$  is Cl,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 341. A chiral resolving acid salt of a compound of Formula Ia or Ib:

$$\begin{array}{c|c}
R^{4} & R^{2} \\
\hline
R^{5} & R^{8b} & R^{8a} & R^{7a}
\end{array}$$
Ia

wherein:

R<sup>1</sup> is H or C<sub>1</sub>-C<sub>8</sub> alkyl;

 $R^2$  is  $C_1$ - $C_8$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), -C(O)NH-( $C_1$ - $C_8$  alkyl), OH,  $C_1$ - $C_4$  haloalkyl, or CH<sub>2</sub>OH;

R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>2</sub>-C<sub>8</sub> alkenyl, C<sub>2</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, hydroxy, mercapto, OR<sup>9</sup>, SR<sup>9</sup>, alkoxyalkyl, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, hydroxyalkyl, NR<sup>10</sup>R<sup>11</sup>, CN, NO<sub>2</sub>, heterocycloalkyl, aryl, or heteroaryl, wherein said aryl and heteroaryl can be substituted with one or more substituents selected from C<sub>1</sub>-C<sub>8</sub> alkyl, halo, C<sub>1</sub>-C<sub>8</sub> haloalkyl, and alkoxy; or R<sup>4</sup> and R<sup>5</sup> together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

 $R^{7a}$  and  $R^{7b}$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or hydroxyalkyl, or  $R^{7a}$  and  $R^{7b}$  together with the carbon atom to which they are attached form a  $C_3$ - $C_7$  cycloalkyl group;

 $R^{8a}$  and  $R^{8b}$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or hydroxyalkyl, or  $R^{8a}$  and  $R^{8b}$  together with the carbon atom to which they are attached form a  $C_3$ - $C_7$  cycloalkyl group;

 $R^9$  is H,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl; and

 $R^{10}$  and  $R^{11}$  are each, independently, H,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl, or  $R^{10}$  and  $R^{11}$  together with the N atom to which they are attached form a heterocyclic ring.

- 342. The salt of claim 341 wherein said salt is a tartaric acid salt.
- 343. The salt of claim 342 wherein said tartaric acid is L-(+)-tartaric acid.

PCT/US2004/019279

The salt of claim 342 wherein said salt is a tartaric acid salt of a compound of Formula Ia or a compound of Formula Ib.

#### 345. The salt of claim 341 wherein:

 $R^2$  is  $C_1$ - $C_8$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), -C(O)NH-( $C_1$ - $C_8$  alkyl), OH, or CH<sub>2</sub>OH;

R<sup>3</sup> and R<sup>6</sup> are each H;

R<sup>4</sup> and R<sup>5</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>8</sub> haloalkyl, hydroxy, OR<sup>9</sup>, SR<sup>9</sup>, alkoxyalkyl, NHR<sup>10</sup>, NR<sup>10</sup>R<sup>11</sup>, aryl, or heteroaryl, wherein said aryl can be substituted with up to two substituents selected from C<sub>1</sub>-C<sub>8</sub> alkyl, halo, C<sub>1</sub>-C<sub>8</sub> haloalkyl, and alkoxy, and said heteroaryl can be optionally substituted with up to two substituents selected from halogen and C<sub>1</sub>-C<sub>8</sub> alkyl; or R<sup>4</sup> and R<sup>5</sup> together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

R<sup>7a</sup> is H;

R<sup>7b</sup> is H or C<sub>1</sub>-C<sub>8</sub> alkyl;

R<sup>8a</sup> and R<sup>8b</sup> are each H; and

 $R^{10}$  and  $R^{11}$  are each, independently,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  haloalkyl, aryl, heteroaryl, aralkyl, heteroarylalkyl, or allyl;

provided that:

- if R<sup>2</sup> is methyl and R<sup>4</sup> is H, then R<sup>5</sup> is not thiazole, substituted thiazole or a thiazole (A) derivative;
  - if R<sup>7a</sup> is H and R<sup>7b</sup> is other than H, then neither R<sup>4</sup> nor R<sup>5</sup> can be H: (B)
  - if R<sup>1</sup> and R<sup>2</sup> are methyl, and R<sup>5</sup> is H then R<sup>4</sup> is not NHR<sup>10</sup> or NR<sup>10</sup>R<sup>11</sup>; and (C)
- if R<sup>1</sup> and R<sup>2</sup> are methyl and R<sup>5</sup> is H, then R<sup>4</sup> is not imidazolyl, substituted imidazolyl, or (D) an imidazole derivative.

#### 345. The salt of claim 341 wherein:

 $R^2$  is  $C_1$ - $C_4$  alkyl, - $CH_2$ -O-( $C_1$ - $C_4$  alkyl),  $C_1$ - $C_4$  haloalkyl, or  $CH_2$ OH;

R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>4</sub> alkyl, C<sub>1</sub>-C<sub>4</sub> haloalkyl, hydroxy, NH<sub>2</sub>. CN, or NO<sub>2</sub>; and

R<sup>7a</sup>, R<sup>7b</sup>, R<sup>8a</sup>, and R<sup>8b</sup> are each H;

provided that:

- when R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl, -CH<sub>2</sub>-O-(C<sub>1</sub>-C<sub>4</sub> alkyl), or CH<sub>2</sub>OH, then R<sup>3</sup> and R<sup>6</sup> are not both H: (H)and
  - when R<sup>2</sup> is CH<sub>3</sub>, then R<sup>3</sup>, R<sup>4</sup>, and R<sup>6</sup> are each H and R<sup>5</sup> is not H or isopropyl. **(I)**
- The salt of claim 341 wherein R<sup>7a</sup>, R<sup>7b</sup>, R<sup>8a</sup>, and R<sup>8b</sup> are each H. 346.
- The salt of claim 341 wherein R<sup>3</sup> and R<sup>6</sup> are each H. 347.

- 348. The salt of claim 341 wherein R<sup>3</sup>, R<sup>5</sup>, and R<sup>6</sup> are each H.
- 349. The salt of claim 341 wherein R<sup>4</sup> is halo.
- 350. The salt of claim 341 wherein R<sup>4</sup> is Cl.
- 351. The salt of claim 341 wherein  $R^2$  is  $C_1$ - $C_4$  alkyl.
- 352. The salt of claim 341 wherein  $R^2$  is methyl.
- 353. The salt of claim 341 wherein R<sup>1</sup> is H.
- 354. The salt of claim 341 wherein  $R^1$  is H or  $C_1$ - $C_4$  alkyl,  $R^2$  is  $C_1$ - $C_4$  alkyl,  $R^3$  is H,  $R^4$  is halo,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 355. The salt of claim 341 wherein  $R^1$  is H,  $R^2$  is Me,  $R^3$  is H,  $R^4$  is Cl,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 356. A composition comprising at least one salt of claim 341.
- 357. The composition of claim 356 wherein said composition comprises said salt form of a compound of Formula Ia and said salt form of a compound of Formula Ib, wherein said composition is enriched in one of either said salt form of a compound of Formula Ia or said salt form of a compound of Formula Ib.
- 358. A process for preparing a compound of Formula V:

$$R^4$$
 $R^5$ 
 $R^6$ 
 $R^{8b}$ 
 $R^{8a}$ 
 $V$ 

or salt thereof, wherein:

 $R^1$  is H or  $C_1$ - $C_8$  alkyl;

 $R^2$  is  $C_1$ - $C_8$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), -C(O)NH-( $C_1$ - $C_8$  alkyl), or  $C_1$ - $C_4$  haloalkyl;

 $R^3$ ,  $R^4$ ,  $R^5$ , and  $R^6$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, hydroxy,  $OR^9$ , alkoxyalkyl, C(O)-alkyl, C(O)-alkyl, C(O)-blyl, C(O)-blyl, C(O)-blyl, C(O)-blyl, C(O)-blyl, C(O)-blyl, C(O)-blyl, hydroxyalkyl, C(O)-blyl, C(O)

 $R^{8a}$  and  $R^{8b}$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or hydroxyalkyl, or  $R^{8a}$  and  $R^{8b}$  together with the carbon atom to which they are attached form a  $C_3$ - $C_7$  cycloalkyl group;

 $R^9$  is H,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl; and

R<sup>10</sup> and R<sup>11</sup> are each, independently, H, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>1</sub>-C<sub>8</sub> alkenyl, C<sub>1</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl, or R<sup>10</sup> and R<sup>11</sup> together with the N atom to which they are attached form a heterocyclic ring; comprising reacting a compound of Formula IX:

or salt thereof, wherein  $X^2$  is halo or  $SO_2R$ " and R" is  $C_1$ - $C_8$  alkyl, aryl, or heteroaryl each optionally substituted by one or more halo, cyano, nitro,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  haloalkyl,  $C_1$ - $C_4$  alkoxy, or  $C_1$ - $C_4$  haloalkoxy, with a cyclizing reagent for a time and under conditions suitable for forming said compound of Formula V.

- 359. The process of claim 358 wherein said cyclizing reagent is a Lewis acid.
- 360. The process of claim 358 wherein said cyclizing reagent is AlCl<sub>3</sub>.
- 361. The process of claim 358 wherein said reacting is carried out in the presence of a non-polar solvent.

PCT/US2004/019279

The process of claim 358 wherein said reacting is carried out in the presence of 1,2dichlorobenzene.

- 363. The process of claim 358 wherein said reacting is carried out at an elevated temperature.
- 364. The process of claim 358 wherein said reacting is carried out at a temperature between about 100 and about 150 °C.
- 365. The process of claim 358 wherein  $X^2$  is Br.
- The process of claim 358 wherein: 366.

$$R^2$$
 is  $C_1$ - $C_8$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), -C(O)NH-( $C_1$ - $C_8$  alkyl);  $R^3$  and  $R^6$  are each H;

R<sup>4</sup> and R<sup>5</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>8</sub> haloalkyl, hydroxy, OR<sup>9</sup>, alkoxyalkyl, NHR<sup>10</sup>, NR<sup>10</sup>R<sup>11</sup>, aryl, or heteroaryl, wherein said aryl can be substituted with up to two substituents selected from C<sub>1</sub>-C<sub>8</sub> alkyl, halo, C<sub>1</sub>-C<sub>8</sub> haloalkyl, and alkoxy, and said heteroaryl can be optionally substituted with up to two substituents selected from halogen and C<sub>1</sub>-C<sub>8</sub> alkyl; or R<sup>4</sup> and R<sup>5</sup> together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

R<sup>7a</sup> is H;

R<sup>7b</sup> is H or C<sub>1</sub>-C<sub>8</sub> alkyl;

R<sup>8a</sup> and R<sup>8b</sup> are each H: and

 $R^{10}$  and  $R^{11}$  are each, independently,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  haloalkyl, aryl, heteroaryl, aralkyl, heteroarylalkyl, or allyl;

provided that:

- if R<sup>2</sup> is methyl and R<sup>4</sup> is H, then R<sup>5</sup> is not thiazole, substituted thiazole or a thiazole derivative;
  - if R<sup>7a</sup> is H and R<sup>7b</sup> is other than H, then neither R<sup>4</sup> nor R<sup>5</sup> can be H; (B)
  - if R<sup>1</sup> and R<sup>2</sup> are methyl, and R<sup>5</sup> is H then R<sup>4</sup> is not NHR<sup>10</sup> or NR<sup>10</sup>R<sup>11</sup>; and (C)
- if R<sup>1</sup> and R<sup>2</sup> are methyl and R<sup>5</sup> is H, then R<sup>4</sup> is not imidazolyl, substituted imidazolyl, or (D) an imidazole derivative.
- 367. The process of claim 366 wherein R<sup>1</sup> is H.
- The process of claim 366 wherein R<sup>1</sup> is C<sub>1</sub>-C<sub>8</sub> alkyl. 368.
- 369. The process of claim 366 wherein R<sup>2</sup> is methyl, ethyl, n-propyl, or isopropyl.
- The process of claim 366 wherein R<sup>2</sup> is methyl. 370.

371. The process of claim 366 wherein R<sup>4</sup> is Cl, Br, haloalkyl, CF<sub>3</sub>, thiophenyl, furanyl, pyrrolyl, pyrazolyl, or imidazolyl.

- 369. The process of claim 366 wherein R<sup>4</sup> is Cl.
- 373. The process of claim 366 wherein  $R^5$  is methoxy, ethoxy, n-propoxy, isopropoxy, allyloxy, thiophenyl, furanyl, pyrrolyl, pyrazolyl, imidazolyl, or phenyl, wherein said imidazolyl is optionally substituted by one or more halo or methyl and said phenyl is optionally substituted with up to two substituents selected from  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  haloalkyl, halo, and alkoxy.
- 374. The process of claim 366 wherein R<sup>5</sup> is H.
- 375. The process of claim 355 wherein:

 $R^2$  is  $C_1$ - $C_4$  alkyl, - $CH_2$ -O-( $C_1$ - $C_4$  alkyl), or  $C_1$ - $C_4$  haloalkyl;

 $R^3$ ,  $R^4$ ,  $R^5$ , and  $R^6$  are each, independently, H, halo,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  haloalkyl, hydroxy,  $NH_2$ , CN, or  $NQ_2$ ; and

 $R^{7a}$ ,  $R^{7b}$ ,  $R^{8a}$ , and  $R^{8b}$  are each H; provided that:

- (H) when R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl or -CH<sub>2</sub>-O-(C<sub>1</sub>-C<sub>4</sub> alkyl), then R<sup>3</sup> and R<sup>6</sup> are not both H; and
- (I) when  $R^2$  is  $CH_3$ , then  $R^3$ ,  $R^4$ , and  $R^6$  are each H and  $R^5$  is not H or isopropyl.
- 376. The process of claim 375 wherein R<sup>1</sup> is H.
- 377. The process of claim 375 wherein  $R^1$  is  $C_1$ - $C_8$  alkyl.
- 378. The process of claim 375 wherein  $R^2$  is  $C_1$ - $C_4$  alkyl or  $C_1$ - $C_4$  haloalkyl.
- 379. The process of claim 375 wherein R<sup>2</sup> is methyl, ethyl, isopropyl, n-butyl, or CF<sub>3</sub>.
- 380. The process of claim 375 wherein R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, methyl, NH<sub>2</sub>, CN, halo, CF<sub>3</sub>, NO<sub>2</sub>, or OH.
- 381. The process of claim 358 wherein R<sup>7a</sup>, R<sup>7b</sup>, R<sup>8a</sup>, and R<sup>8b</sup> are each H.
- 382. The process of claim 358 wherein  $R^3$  and  $R^6$  are each H.
- 383. The process of claim 358 wherein R<sup>3</sup>, R<sup>5</sup>, and R<sup>6</sup> are each H.

- 384. The process of claim 358 wherein  $\mathbb{R}^4$  is halo.
- 385. The process of claim 358 wherein R<sup>4</sup> is Cl.
- 386. The process of claim 358 wherein R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl.
- 387. The process of claim 358 wherein  $\mathbb{R}^2$  is methyl.
- 388. The process of claim 358 wherein R<sup>1</sup> is H.
- 389. The process of claim 358 wherein  $R^1$  is H or  $C_1$ - $C_4$  alkyl,  $R^2$  is  $C_1$ - $C_4$  alkyl,  $R^3$  is H,  $R^4$  is halo,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 390. The process of claim 358 wherein  $R^1$  is H,  $R^2$  is Me,  $R^3$  is H,  $R^4$  is Cl,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 391. A process for preparing a compound of Formula IX:

$$R^4$$
 $R^5$ 
 $R^6$ 
 $R^{8b}$ 
 $R^{8a}$ 
 $R^8$ 
 $R^8$ 

or salt thereof,

wherein:

R<sup>1</sup> is H or C<sub>1</sub>-C<sub>8</sub> alkyl;

 $R^2$  is  $C_1$ - $C_8$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), -C(O)NH-( $C_1$ - $C_8$  alkyl), or  $C_1$ - $C_4$  haloalkyl;

R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>2</sub>-C<sub>8</sub> alkenyl, C<sub>2</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, hydroxy, OR<sup>9</sup>, alkoxyalkyl, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, hydroxyalkyl, NR<sup>10</sup>R<sup>11</sup>, CN, NO<sub>2</sub>, heterocycloalkyl, aryl, or heteroaryl, wherein said aryl and heteroaryl can be substituted with one or more substituents selected from C<sub>1</sub>-C<sub>8</sub> alkyl, halo, C<sub>1</sub>-C<sub>8</sub> haloalkyl, and alkoxy; or R<sup>4</sup> and R<sup>5</sup> together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

R<sup>8a</sup> and R<sup>8b</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>2</sub>-C<sub>8</sub> alkenyl, C<sub>2</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or hydroxyalkyl, or R<sup>8a</sup> and R<sup>8b</sup> together with the carbon atom to which they are attached form a C<sub>3</sub>-C<sub>7</sub> cycloalkyl group;

R<sup>9</sup> is H, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>1</sub>-C<sub>8</sub> alkenyl, C<sub>1</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, aralkyl, aryl, heteroarylalkyl, or allyl;

 $R^{10}$  and  $R^{11}$  are each, independently, H,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl, or  $R^{10}$  and  $R^{11}$  together with the N atom to which they are attached form a heterocyclic ring; and

X2 is halo or SO2R"; and

R" is C<sub>1</sub>-C<sub>8</sub> alkyl, aryl, or heteroaryl each optionally substituted by one or more halo, cyano, nitro, C<sub>1</sub>-C<sub>4</sub> alkyl, C<sub>1</sub>-C<sub>4</sub> haloalkyl, C<sub>1</sub>-C<sub>4</sub> alkoxy, or C<sub>1</sub>-C<sub>4</sub> haloalkoxy; comprising reacting a compound of Formula X:

$$R^4$$
 $R^5$ 
 $R^6$ 
 $R^{8b}$ 
 $R^{8a}$ 
 $R^8$ 

or salt thereof, with a halogenating/sulfonating reagent for a time and under conditions suitable for forming said compound of Formula XI.

- 392. The process of claim 391 wherein said halogenating/sulfonating reagent is SOBr<sub>2</sub> or SOCl<sub>2</sub>.
- 393. The process of claim 391 wherein  $X^2$  is Br.
- 394. The process of claim 391 wherein said reacting is carried out in the presence of solvent.
- 395. The process of claim 394 wherein said solvent comprises dimethylformamide or toluene.
- 396. The process of claim 394 wherein said solvent comprises dimethylformamide and toluene.
- 397. The process of claim 391 wherein said reacting is carried out at elevated temperature.
- 398. The process of claim 391 wherein said elevated temperature is from about -40 to about 80 °C.

- 399. The process of claim 391 wherein said compound of Formula XI is isolated.
- 400. The process of claim 391 wherein said compound of Formula XI is isolated by recrystallization from a solvent comprising water and alcohol.
- 401. The process of claim 391 wherein:

 $R^2$  is  $C_1$ - $C_8$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), or -C(O)NH-( $C_1$ - $C_8$  alkyl);  $R^3$  and  $R^6$  are each H;

 $R^4$  and  $R^5$  are each, independently, H, halo,  $C_1$ - $C_8$  haloalkyl, hydroxy,  $OR^9$ , alkoxyalkyl, NHR<sup>10</sup>, NR<sup>10</sup>R<sup>11</sup>, aryl, or heteroaryl, wherein said aryl can be substituted with up to two substituents selected from  $C_1$ - $C_8$  alkyl, halo,  $C_1$ - $C_8$  haloalkyl, and alkoxy, and said heteroaryl can be optionally substituted with up to two substituents selected from halogen and  $C_1$ - $C_8$  alkyl; or  $R^4$  and  $R^5$  together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

R<sup>7a</sup> is H;

R<sup>7b</sup> is H or C<sub>1</sub>-C<sub>8</sub> alkyl;

R<sup>8a</sup> and R<sup>8b</sup> are each H; and

 $R^{10}$  and  $R^{11}$  are each, independently,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  haloalkyl, aryl, heteroaryl, aralkyl, heteroarylalkyl, or allyl;

provided that:

- (A) if  $R^2$  is methyl and  $R^4$  is H, then  $R^5$  is not thiazole, substituted thiazole or a thiazole derivative;
  - (B) if R<sup>7a</sup> is H and R<sup>7b</sup> is other than H, then neither R<sup>4</sup> nor R<sup>5</sup> can be H;
  - (C) if R<sup>1</sup> and R<sup>2</sup> are methyl, and R<sup>5</sup> is H then R<sup>4</sup> is not NHR<sup>10</sup> or NR<sup>10</sup>R<sup>11</sup>; and
- (D) if  $R^1$  and  $R^2$  are methyl and  $R^5$  is H, then  $R^4$  is not imidazolyl, substituted imidazolyl, or an imidazole derivative.
- 402. The process of claim 401 wherein R<sup>1</sup> is H.
- 403. The process of claim 401 wherein R<sup>1</sup> is C<sub>1</sub>-C<sub>8</sub> alkyl.
- 404. The process of claim 402 wherein R<sup>2</sup> is methyl, ethyl, n-propyl, or isopropyl.
- 405. The process of claim 403 wherein  $R^2$  is methyl.
- 406. The process of claim 404 wherein R<sup>4</sup> is Cl, Br, haloalkyl, CF<sub>3</sub>, thiophenyl, furanyl, pyrrolyl, pyrazolyl, or imidazolyl.
- 407. The process of claim 401 wherein R<sup>4</sup> is Cl.

408. The process of claim 401 wherein  $R^5$  is methoxy, ethoxy, n-propoxy, isopropoxy, allyloxy, thiophenyl, furanyl, pyrrolyl, pyrazolyl, imidazolyl, or phenyl, wherein said imidazolyl is optionally substituted by one or more halo or methyl and said phenyl is optionally substituted with up to two substituents selected from  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  haloalkyl, halo, and alkoxy.

- 409. The process of claim 401 wherein R<sup>5</sup> is H.
- 410. The process of claim 391 wherein:

 $R^2$  is  $C_1$ - $C_4$  alkyl, - $CH_2$ -O-( $C_1$ - $C_4$  alkyl), or  $C_1$ - $C_4$  haloalkyl;

 $R^3$ ,  $R^4$ ,  $R^5$ , and  $R^6$  are each, independently, H, halo,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  haloalkyl, hydroxy,  $NH_2$ , CN, or  $NO_2$ ; and

R<sup>7a</sup>, R<sup>7b</sup>, R<sup>8a</sup>, and R<sup>8b</sup> are each H; provided that:

- (H) when R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl or -CH<sub>2</sub>-O-(C<sub>1</sub>-C<sub>4</sub> alkyl), then R<sup>3</sup> and R<sup>6</sup> are not both H; and
- (I) when  $R^2$  is  $CH_3$ , then  $R^3$ ,  $R^4$ , and  $R^6$  are each H and  $R^5$  is not H or isopropyl.
- 411. The process of claim 410 wherein R<sup>1</sup> is H.
- 412. The process of claim 410 wherein R<sup>1</sup> is C<sub>1</sub>-C<sub>8</sub> alkyl.
- 413. The process of claim 410 wherein  $R^2$  is  $C_1$ - $C_4$  alkyl or  $C_1$ - $C_4$  haloalkyl.
- 414. The process of claim 410 wherein R<sup>2</sup> is methyl, ethyl, isopropyl, n-butyl, or CF<sub>3</sub>.
- 415. The process of claim 410 wherein R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, methyl, NH<sub>2</sub>, CN, halo, CF<sub>3</sub>, NO<sub>2</sub>, or OH.
- 416. The process of claim 391 wherein R<sup>7a</sup>, R<sup>7b</sup>, R<sup>8a</sup>, and R<sup>8b</sup> are each H.
- 417. The process of claim 391 wherein  $R^3$  and  $R^6$  are each H.
- 418. The process of claim 391 wherein R<sup>3</sup>, R<sup>5</sup>, and R<sup>6</sup> are each H.
- 419. The process of claim 391 wherein  $R^4$  is halo.
- 420. The process of claim 391 wherein R<sup>4</sup> is Cl.

- 421. The process of claim 391 wherein  $R^2$  is  $C_1$ - $C_4$  alkyl.
- 422. The process of claim 391 wherein  $R^2$  is methyl.
- 423. The process of claim 391 wherein R<sup>1</sup> is H.
- 424. The process of claim 391 wherein  $R^1$  is H or  $C_1$ - $C_4$  alkyl,  $R^2$  is  $C_1$ - $C_4$  alkyl,  $R^3$  is H,  $R^4$  is halo,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 425. The process of claim 391 wherein  $R^1$  is H,  $R^2$  is Me,  $R^3$  is H,  $R^4$  is Cl,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 426. A process for preparing a compound of Formula X:

$$R^4$$
 $R^5$ 
 $R^6$ 
 $R^{8b}$ 
 $R^{8a}$ 
 $R^8$ 

or salt thereof,

wherein:

R<sup>1</sup> is H or C<sub>1</sub>-C<sub>8</sub> alkyl;

 $R^2$  is  $C_1$ - $C_8$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), -C(O)NH-( $C_1$ - $C_8$  alkyl), or  $C_1$ - $C_4$  haloalkyl;

 $R^3$ ,  $R^4$ ,  $R^5$ , and  $R^6$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, hydroxy,  $OR^9$ , alkoxyalkyl, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, hydroxyalkyl,  $NR^{10}R^{11}$ , CN,  $NO_2$ , heterocycloalkyl, aryl, or heteroaryl, wherein said aryl and heteroaryl can be substituted with one or more substituents selected from  $C_1$ - $C_8$  alkyl, halo,  $C_1$ - $C_8$  haloalkyl, and alkoxy; or  $R^4$  and  $R^5$  together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

 $R^{8a}$  and  $R^{8b}$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or hydroxyalkyl, or  $R^{8a}$  and  $R^{8b}$  together with the carbon atom to which they are attached form a  $C_3$ - $C_7$  cycloalkyl group;

R<sup>9</sup> is H, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>1</sub>-C<sub>8</sub> alkenyl, C<sub>1</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, aralkyl, aryl, heteroarylalkyl, or allyl; and

PCT/US2004/019279

2005/019179  $\mathbb{R}^{10}$  and  $\mathbb{R}^{11}$  are each, independently, H,  $\mathbb{C}_1$ - $\mathbb{C}_8$  alkyl,  $\mathbb{C}_1$ - $\mathbb{C}_8$  alkenyl,  $\mathbb{C}_1$ - $\mathbb{C}_8$  alkynyl,  $\mathbb{C}_3$ - $\mathbb{C}_7$ cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl, or R<sup>10</sup> and R<sup>11</sup> together with the N atom to which they are attached form a heterocyclic ring; comprising reacting a compound of Formula XI:

$$R^4$$
 $R^5$ 
 $R^6$ 
 $R^{8b}$ 
 $R^{8a}$ 
 $XI$ 

wherein X<sup>1</sup> is a leaving group, with a compound of Formula:

for a time and under conditions suitable for forming said compound of Formula X.

- 427. The process of claim 426 wherein said reacting is carried out at elevated temperature.
- 428. The process of claim 427 wherein said temperature is from about 80 to about 110 °C.
- 429. The process of claim 427 wherein said reacting is carried out in the absence of solvent.
- 430. The process of claim 426 wherein:

 $R^2$  is  $C_1$ - $C_8$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), or -C(O)NH-( $C_1$ - $C_8$  alkyl); R<sup>3</sup> and R<sup>6</sup> are each H;

R<sup>4</sup> and R<sup>5</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>8</sub> haloalkyl, hydroxy, OR<sup>9</sup>, alkoxyalkyl, NHR<sup>10</sup>, NR<sup>10</sup>R<sup>11</sup>, aryl, or heteroaryl, wherein said aryl can be substituted with up to two substituents selected from C<sub>1</sub>-C<sub>8</sub> alkyl, halo, C<sub>1</sub>-C<sub>8</sub> haloalkyl, and alkoxy, and said heteroaryl can be optionally substituted with up to two substituents selected from halogen and C<sub>1</sub>-C<sub>8</sub> alkyl; or R<sup>4</sup> and R<sup>5</sup> together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

R<sup>7b</sup> is H or C<sub>1</sub>-C<sub>8</sub> alkyl;

R8a and R8b are each H; and

R<sup>10</sup> and R<sup>11</sup> are each, independently, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>1</sub>-C<sub>8</sub> alkenyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, aryl, heteroaryl, aralkyl, heteroarylalkyl, or allyl;

provided that:

- (A) if  $R^2$  is methyl and  $R^4$  is H, then  $R^5$  is not thiazole, substituted thiazole or a thiazole derivative;
  - (B) if R<sup>7a</sup> is H and R<sup>7b</sup> is other than H, then neither R<sup>4</sup> nor R<sup>5</sup> can be H;
  - (C) if R<sup>1</sup> and R<sup>2</sup> are methyl, and R<sup>5</sup> is H then R<sup>4</sup> is not NHR<sup>10</sup> or NR<sup>10</sup>R<sup>11</sup>; and
- (D) if R<sup>1</sup> and R<sup>2</sup> are methyl and R<sup>5</sup> is H, then R<sup>4</sup> is not imidazolyl, substituted imidazolyl, or an imidazole derivative.
- 431. The process of claim 430 wherein R<sup>1</sup> is H.
- 432. The process of claim 430 wherein  $R^1$  is  $C_1$ - $C_8$  alkyl.
- 433. The process of claim 430 wherein R<sup>2</sup> is methyl, ethyl, n-propyl, or isopropyl.
- 434. The process of claim 430 wherein  $R^2$  is methyl.
- 435. The process of claim 430 wherein R<sup>4</sup> is Cl, Br, haloalkyl, CF<sub>3</sub>, thiophenyl, furanyl, pyrrolyl, pyrazolyl, or imidazolyl.
- 436. The process of claim 430 wherein  $R^4$  is Cl.
- 437. The process of claim 430 wherein  $R^5$  is methoxy, ethoxy, n-propoxy, isopropoxy, allyloxy, thiophenyl, furanyl, pyrrolyl, pyrazolyl, imidazolyl, or phenyl, wherein said imidazolyl is optionally substituted by one or more halo or methyl and said phenyl is optionally substituted with up to two substituents selected from  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  haloalkyl, halo, and alkoxy.
- 438. The process of claim 430 wherein R<sup>5</sup> is H.
- 439. The process of claim 426 wherein:

 $R^2$  is  $C_1$ - $C_4$  alkyl, - $CH_2$ -O-( $C_1$ - $C_4$  alkyl), or  $C_1$ - $C_4$  haloalkyl;

 $R^3$ ,  $R^4$ ,  $R^5$ , and  $R^6$  are each, independently, H, halo,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  haloalkyl, hydroxy,  $NH_2$ , CN, or  $NO_2$ ; and

 $R^{7a}$ ,  $R^{7b}$ ,  $R^{8a}$ , and  $R^{8b}$  are each H; provided that:

- (H) when R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl or -CH<sub>2</sub>-O-(C<sub>1</sub>-C<sub>4</sub> alkyl), then R<sup>3</sup> and R<sup>6</sup> are not both H; and
- (I) when  $R^2$  is  $CH_3$ , then  $R^3$ ,  $R^4$ , and  $R^6$  are each H and  $R^5$  is not H or isopropyl.

- 440. The process of claim 439 wherein R<sup>1</sup> is H.
- 441. The process of claim 439 wherein  $R^1$  is  $C_1$ - $C_8$  alkyl.
- 442. The process of claim 439 wherein  $R^2$  is  $C_1$ - $C_4$  alkyl or  $C_1$ - $C_4$  haloalkyl.
- 443. The process of claim 439 wherein R<sup>2</sup> is methyl, ethyl, isopropyl, n-butyl, or CF<sub>3</sub>.
- 444. The process of claim 439 wherein R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, methyl, NH<sub>2</sub>, CN, halo, CF<sub>3</sub>, NO<sub>2</sub>, or OH.
- 445. The process of claim 426 wherein R<sup>7a</sup>, R<sup>7b</sup>, R<sup>8a</sup>, and R<sup>8b</sup> are each H.
- 446. The process of claim 426 wherein R<sup>3</sup> and R<sup>6</sup> are each H.
- 447. The process of claim 426 wherein R<sup>3</sup>, R<sup>5</sup>, and R<sup>6</sup> are each H.
- 448. The process of claim 426 wherein R<sup>4</sup> is halo.
- 449. The process of claim 426 wherein R<sup>4</sup> is Cl.
- 450. The process of claim 426 wherein  $R^2$  is  $C_1$ - $C_4$  alkyl.
- 451. The process of claim 426 wherein  $R^2$  is methyl.
- 452. The process of claim 426 wherein R<sup>1</sup> is H.
- 453. The process of claim 426 wherein  $R^1$  is H or  $C_1$ - $C_4$  alkyl,  $R^2$  is  $C_1$ - $C_4$  alkyl,  $R^3$  is H,  $R^4$  is halo,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 454. The process of claim 426 wherein  $R^1$  is H,  $R^2$  is Me,  $R^3$  is H,  $R^4$  is Cl,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 455. A process for preparing a compound of Formula V:

$$R^4$$
 $R^5$ 
 $R^6$ 
 $R^{8b}$ 
 $R^{8a}$ 
 $R^8$ 

or salt thereof,

wherein:

 $R^1$  is H or  $C_1$ - $C_8$  alkyl;

 $R^2$  is  $C_1$ - $C_8$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), -C(O)NH-( $C_1$ - $C_8$  alkyl), or  $C_1$ - $C_4$  haloalkyl;

R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>2</sub>-C<sub>8</sub> alkenyl, C<sub>2</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, hydroxy, OR<sup>9</sup>, alkoxyalkyl, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, hydroxyalkyl, NR<sup>10</sup>R<sup>11</sup>, CN, NO<sub>2</sub>, heterocycloalkyl, aryl, or heteroaryl, wherein said aryl and heteroaryl can be substituted with one or more substituents selected from C<sub>1</sub>-C<sub>8</sub> alkyl, halo, C<sub>1</sub>-C<sub>8</sub> haloalkyl, and alkoxy; or R<sup>4</sup> and R<sup>5</sup> together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

R<sup>8a</sup> and R<sup>8b</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>2</sub>-C<sub>8</sub> alkenyl, C<sub>2</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or hydroxyalkyl, or R<sup>8a</sup> and R<sup>8b</sup> together with the carbon atom to which they are attached form a C<sub>3</sub>-C<sub>7</sub> cycloalkyl group;

 $R^9$  is H,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl; and

 $R^{10}$  and  $R^{11}$  are each, independently, H,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl, or  $R^{10}$  and  $R^{11}$  together with the N atom to which they are attached form a heterocyclic ring; comprising:

a) reacting a compound of Formula X:

$$R^4$$
 $R^5$ 
 $R^6$ 
 $R^{8b}$ 
 $R^{8a}$ 
 $X$ 

or salt thereof:

with a halogenating/sulfonating reagent for a time and under conditions suitable for forming a compound of Formula IX:

$$R^4$$
 $R^5$ 
 $R^6$ 
 $R^{8b}$ 
 $R^{8a}$ 
 $R^8$ 
 $R^8$ 

or salt thereof;

wherein  $X^2$  is halo or  $SO_2R$ " and R" is  $C_1$ - $C_8$  alkyl, aryl, or heteroaryl each optionally substituted by one or more halo, cyano, nitro,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  haloalkyl,  $C_1$ - $C_4$  alkoxy, or  $C_1$ - $C_4$  haloalkoxy; and

- b) reacting said compound of Formula IX with a cyclizing reagent for a time and under conditions suitable for forming said compound of Formula V.
- 456. The process of claim 455 wherein said cyclizing reagent is a Lewis acid.
- 457. The process of claim 455 wherein said cyclizing reagent is AlCl<sub>3</sub>.
- 458. The process of claim 455 wherein said reacting of step (b) is carried out in the presence of a non-polar solvent.
- 459. The process of claim 455 wherein said reacting of step (b) is carried out in the presence of 1,2-dichlorobenzene.
- 460. The process of claim 455 wherein said reacting of step (b) is carried out at an elevated temperature.
- 461. The process of claim 455 wherein said halogenating/sulfonating reagent is SOBr<sub>2</sub> or SOCl<sub>2</sub>.
- 462. The process of claim 455 wherein  $X^2$  is Br.
- 463. The process of claim 455 wherein said reacting of step (a) is carried out in the presence of solvent.
- 464. The process of claim 463 wherein said solvent comprises dimethylformamide or toluene.

465. The process of claim 463 wherein said solvent comprises dimethylformamide and toluene.

- 466. The process of claim 455 wherein said compound of Formula XI is isolated.
- 467. The process of claim 466 wherein said compound of Formula XI is isolated by recrystallization from a solvent comprising water and alcohol.
- 468. The process of claim 455 wherein:

 $R^2$  is  $C_1$ - $C_8$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), or -C(O)NH-( $C_1$ - $C_8$  alkyl);  $R^3$  and  $R^6$  are each H;

 $R^4$  and  $R^5$  are each, independently, H, halo,  $C_1$ - $C_8$  haloalkyl, hydroxy,  $OR^9$ , alkoxyalkyl,  $NHR^{10}$ ,  $NR^{10}R^{11}$ , aryl, or heteroaryl, wherein said aryl can be substituted with up to two substituents selected from  $C_1$ - $C_8$  alkyl, halo,  $C_1$ - $C_8$  haloalkyl, and alkoxy, and said heteroaryl can be optionally substituted with up to two substituents selected from halogen and  $C_1$ - $C_8$  alkyl; or  $R^4$  and  $R^5$  together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

R<sup>7a</sup> is H:

R<sup>7b</sup> is H or C<sub>1</sub>-C<sub>8</sub> alkyl;

R<sup>8a</sup> and R<sup>8b</sup> are each H; and

 $R^{10}$  and  $R^{11}$  are each, independently,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  haloalkyl, aryl, heteroarylakyl, or allyl;

provided that:

- (A) if R<sup>2</sup> is methyl and R<sup>4</sup> is H, then R<sup>5</sup> is not thiazole, substituted thiazole or a thiazole derivative;
  - (B) if R<sup>7a</sup> is H and R<sup>7b</sup> is other than H, then neither R<sup>4</sup> nor R<sup>5</sup> can be H;
  - (C) if R<sup>1</sup> and R<sup>2</sup> are methyl, and R<sup>5</sup> is H then R<sup>4</sup> is not NHR<sup>10</sup> or NR<sup>10</sup>R<sup>11</sup>; and
- (D) if R<sup>1</sup> and R<sup>2</sup> are methyl and R<sup>5</sup> is H, then R<sup>4</sup> is not imidazolyl, substituted imidazolyl, or an imidazole derivative.
- 469. The process of claim 468 wherein R<sup>1</sup> is H.
- 470. The process of claim 468 wherein  $R^1$  is  $C_1$ - $C_8$  alkyl.
- 471. The process of claim 468 wherein R<sup>2</sup> is methyl, ethyl, n-propyl, or isopropyl.
- 472. The process of claim 468 wherein  $R^2$  is methyl.

473. The process of claim 468 wherein R<sup>4</sup> is Cl, Br, haloalkyl, CF<sub>3</sub>, thiophenyl, furanyl, pyrrolyl, pyrazolyl, or imidazolyl.

- 474. The process of claim 468 wherein R<sup>4</sup> is Cl.
- 475. The process of claim 468 wherein  $R^5$  is methoxy, ethoxy, n-propoxy, isopropoxy, allyloxy, thiophenyl, furanyl, pyrrolyl, pyrazolyl, imidazolyl, or phenyl, wherein said imidazolyl is optionally substituted by one or more halo or methyl and said phenyl is optionally substituted with up to two substituents selected from  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  haloalkyl, halo, and alkoxy.
- 476. The process of claim 468 wherein R<sup>5</sup> is H.
- 477. The process of claim 455 wherein:

 $R^2$  is  $C_1$ - $C_4$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_4$  alkyl), or  $C_1$ - $C_4$  haloalkyl;

 $R^3$ ,  $R^4$ ,  $R^5$ , and  $R^6$  are each, independently, H, halo,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  haloalkyl, hydroxy, NH<sub>2</sub>, CN, or NO<sub>2</sub>; and

R<sup>7a</sup>, R<sup>7b</sup>, R<sup>8a</sup>, and R<sup>8b</sup> are each H; provided that:

- (H) when R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl or -CH<sub>2</sub>-O-(C<sub>1</sub>-C<sub>4</sub> alkyl), then R<sup>3</sup> and R<sup>6</sup> are not both H; and
- (I) when R<sup>2</sup> is CH<sub>3</sub>, then R<sup>3</sup>, R<sup>4</sup>, and R<sup>6</sup> are each H and R<sup>5</sup> is not H or isopropyl.
- 478. The process of claim 477 wherein R<sup>1</sup> is H.
- 479. The process of claim 477 wherein  $R^1$  is  $C_1$ - $C_8$  alkyl.
- 480. The process of claim 477 wherein R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl or C<sub>1</sub>-C<sub>4</sub> haloalkyl.
- 481. The process of claim 477 wherein R<sup>2</sup> is methyl, ethyl, isopropyl, n-butyl, or CF<sub>3</sub>.
- 482. The process of claim 477 wherein R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, methyl, NH<sub>2</sub>, CN, halo, CF<sub>3</sub>, NO<sub>2</sub>, or OH.
- 483. The process of claim 455 wherein R<sup>7a</sup>, R<sup>7b</sup>, R<sup>8a</sup>, and R<sup>8b</sup> are each H.
- 484. The process of claim 455 wherein R<sup>3</sup> and R<sup>6</sup> are each H.
- 485. The process of claim 455 wherein R<sup>3</sup>, R<sup>5</sup>, and R<sup>6</sup> are each H.

WO 2005/019179

486. The process of claim 455 wherein R<sup>4</sup> is halo.

- 487. The process of claim 455 wherein  $R^4$  is Cl.
- 488. The process of claim 455 wherein  $R^2$  is  $C_1$ - $C_4$  alkyl.
- 489. The process of claim 455 wherein  $R^2$  is methyl.
- 490. The process of claim 455 wherein R<sup>1</sup> is H.
- 491. The process of claim 455 wherein  $R^1$  is H or  $C_1$ - $C_4$  alkyl,  $R^2$  is  $C_1$ - $C_4$  alkyl,  $R^3$  is H,  $R^4$  is halo,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 492. The process of claim 455 wherein  $R^1$  is H,  $R^2$  is Me,  $R^3$  is H,  $R^4$  is Cl,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 493. A process for preparing a compound of Formula V:

$$R^4$$
 $R^5$ 
 $R^6$ 
 $R^{8b}$ 
 $R^{8a}$ 
 $V$ 

or salt thereof,

wherein:

1

 $R^1$  is H or  $C_1$ - $C_8$  alkyl;

 $R^2$  is  $C_1$ - $C_8$  alkyl, - $CH_2$ -O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), -C(O)NH-( $C_1$ - $C_8$  alkyl), or  $C_1$ - $C_4$  haloalkyl;

 $R^3$ ,  $R^4$ ,  $R^5$ , and  $R^6$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, hydroxy,  $OR^9$ , alkoxyalkyl, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, hydroxyalkyl,  $NR^{10}R^{11}$ , CN,  $NO_2$ , heterocycloalkyl, aryl, or heteroaryl, wherein said aryl and heteroaryl can be substituted with one or more substituents selected from  $C_1$ - $C_8$  alkyl, halo,  $C_1$ - $C_8$  haloalkyl, and alkoxy; or  $R^4$  and  $R^5$  together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

 $R^{8a}$  and  $R^{8b}$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or

PCT/US2004/019279

hydroxyalkyl, or R<sup>8a</sup> and R<sup>8b</sup> together with the carbon atom to which they are attached form a C<sub>3</sub>-C<sub>7</sub> cycloalkyl group;

R<sup>9</sup> is H, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>1</sub>-C<sub>8</sub> alkenyl, C<sub>1</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl; and

R<sup>10</sup> and R<sup>11</sup> are each, independently, H, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>1</sub>-C<sub>8</sub> alkenyl, C<sub>1</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl, or R<sup>10</sup> and R<sup>11</sup> together with the N atom to which they are attached form a heterocyclic ring; comprising:

reacting a compound of Formula XI: a)

$$R^4$$
 $R^5$ 
 $R^6$ 
 $R^{8b}$ 
 $R^{8a}$ 
 $XI$ 

wherein X<sup>1</sup> is a leaving group, with a compound of Formula:

or salt thereof, for a time and under conditions suitable for forming a compound of Formula X:

$$R^4$$
 $R^5$ 
 $R^6$ 
 $R^{8b}$ 
 $R^{8a}$ 
 $R^8$ 

or salt thereof;

reacting said compound of Formula X with a halogenating/sulfonating reagent for a time b) and under conditions suitable for forming a compound of Formula IX:

$$R^4$$
 $R^5$ 
 $R^6$ 
 $R^{8b}$ 
 $R^{8a}$ 
 $R^8$ 
 $R^8$ 

or salt thereof;

wherein  $X^2$  is halo or  $SO_2R$ " and R" is  $C_1$ - $C_8$  alkyl, aryl, or heteroaryl each optionally substituted by one or more halo, cyano, nitro,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  haloalkyl,  $C_1$ - $C_4$  alkoxy, or  $C_1$ - $C_4$  haloalkoxy; and

- c) reacting said compound of Formula IX with a cyclizing reagent for a time and under conditions suitable for forming said compound of Formula V.
- 494. The process of claim 493 wherein said cyclizing reagent is a Lewis acid.
- 495. The process of claim 493 wherein said cyclizing reagent is AlCl<sub>3</sub>.
- 496. The process of claim 493 wherein said halogenating/sulfonating reagent is SOBr<sub>2</sub> or SOCl<sub>2</sub>.
- 497. The process of claim 493 wherein  $X^2$  is Br.
- 498. The process of claim 493 wherein:

 $R^2$  is  $C_1$ - $C_8$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), or -C(O)NH-( $C_1$ - $C_8$  alkyl);  $R^3$  and  $R^6$  are each H;

 $R^4$  and  $R^5$  are each, independently, H, halo,  $C_1$ - $C_8$  haloalkyl, hydroxy,  $OR^9$ , alkoxyalkyl,  $NHR^{10}$ ,  $NR^{10}R^{11}$ , aryl, or heteroaryl, wherein said aryl can be substituted with up to two substituents selected from  $C_1$ - $C_8$  alkyl, halo,  $C_1$ - $C_8$  haloalkyl, and alkoxy, and said heteroaryl can be optionally substituted with up to two substituents selected from halogen and  $C_1$ - $C_8$  alkyl; or  $R^4$  and  $R^5$  together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

R<sup>7a</sup> is H;

R7b is H or C1-C8 alkyl;

R<sup>8a</sup> and R<sup>8b</sup> are each H; and

 $R^{10}$  and  $R^{11}$  are each, independently,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  haloalkyl, aryl, heteroaryl, aralkyl, heteroarylalkyl, or allyl;

provided that:

(A) if R<sup>2</sup> is methyl and R<sup>4</sup> is H, then R<sup>5</sup> is not thiazole, substituted thiazole or a thiazole derivative;

- (B) if R<sup>7a</sup> is H and R<sup>7b</sup> is other than H, then neither R<sup>4</sup> nor R<sup>5</sup> can be H;
- (C) if R<sup>1</sup> and R<sup>2</sup> are methyl, and R<sup>5</sup> is H then R<sup>4</sup> is not NHR<sup>10</sup> or NR<sup>10</sup>R<sup>11</sup>; and
- (D) if R<sup>1</sup> and R<sup>2</sup> are methyl and R<sup>5</sup> is H, then R<sup>4</sup> is not imidazolyl, substituted imidazolyl, or an imidazole derivative.
- 499. The process of claim 498 wherein R<sup>1</sup> is H.
- 500. The process of claim 498 wherein R<sup>1</sup> is C<sub>1</sub>-C<sub>8</sub> alkyl.
- 501. The process of claim 498 wherein R<sup>2</sup> is methyl, ethyl, n-propyl, or isopropyl.
- 502. The process of claim 498 wherein R<sup>2</sup> is methyl.
- 503. The process of claim 498 wherein R<sup>4</sup> is Cl, Br, haloalkyl, CF<sub>3</sub>, thiophenyl, furanyl, pyrrolyl, pyrazolyl, or imidazolyl.
- 504. The process of claim 498 wherein R<sup>4</sup> is Cl.
- 505. The process of claim 498 wherein  $R^5$  is methoxy, ethoxy, n-propoxy, isopropoxy, allyloxy, thiophenyl, furanyl, pyrrolyl, pyrazolyl, imidazolyl, or phenyl, wherein said imidazolyl is optionally substituted by one or more halo or methyl and said phenyl is optionally substituted with up to two substituents selected from  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  haloalkyl, halo, and alkoxy.
- 506. The process of claim 498 wherein R<sup>5</sup> is H.
- 507. The process of claim 493 wherein:

 $R^2$  is  $C_1$ - $C_4$  alkyl, - $CH_2$ -O-( $C_1$ - $C_4$  alkyl), or  $C_1$ - $C_4$  haloalkyl;

 $R^3$ ,  $R^4$ ,  $R^5$ , and  $R^6$  are each, independently, H, halo,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  haloalkyl, hydroxy,  $NH_2$ , CN, or  $NO_2$ ; and

R<sup>7a</sup>, R<sup>7b</sup>, R<sup>8a</sup>, and R<sup>8b</sup> are each H; provided that:

- (H) when R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl or -CH<sub>2</sub>-O-(C<sub>1</sub>-C<sub>4</sub> alkyl), then R<sup>3</sup> and R<sup>6</sup> are not both H; and
- (I) when R<sup>2</sup> is CH<sub>3</sub>, then R<sup>3</sup>, R<sup>4</sup>, and R<sup>6</sup> are each H and R<sup>5</sup> is not H or isopropyl.
- 508. The process of claim 507 wherein R<sup>1</sup> is H.
- 509. The process of claim 507 wherein  $R^1$  is  $C_1$ - $C_8$  alkyl.

- 510. The process of claim 507 wherein R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl or C<sub>1</sub>-C<sub>4</sub> haloalkyl.
- 511. The process of claim 507 wherein R<sup>2</sup> is methyl, ethyl, isopropyl, n-butyl, or CF<sub>3</sub>.
- 512. The process of claim 507 wherein R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, methyl, NH<sub>2</sub>, CN, halo, CF<sub>3</sub>, NO<sub>2</sub>, or OH.
- 513. The process of claim 493 wherein R<sup>7a</sup>, R<sup>7b</sup>, R<sup>8a</sup>, and R<sup>8b</sup> are each H.
- 514. The process of claim 493 wherein R<sup>3</sup> and R<sup>6</sup> are each H.
- 515. The process of claim 493 wherein R<sup>3</sup>, R<sup>5</sup>, and R<sup>6</sup> are each H.
- 516. The process of claim 498 wherein R<sup>4</sup> is halo.
- 517. The process of claim 493 wherein R<sup>4</sup> is Cl.
- 518. The process of claim 493 wherein  $R^2$  is  $C_1$ - $C_4$  alkyl.
- 519. The process of claim 493 wherein  $R^2$  is methyl.
- 520. The process of claim 493 wherein R<sup>1</sup> is H.
- 521. The process of claim 493 wherein  $R^1$  is H or  $C_1$ - $C_4$  alkyl,  $R^2$  is  $C_1$ - $C_4$  alkyl,  $R^3$  is H,  $R^4$  is halo,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 522. The process of claim 493 wherein  $R^1$  is H,  $R^2$  is Me,  $R^3$  is H,  $R^4$  is Cl,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 523. A process for preparing a compound of Formula V:

$$R^4$$
 $R^5$ 
 $R^6$ 
 $R^{8b}$ 
 $R^{8a}$ 
 $R^8$ 

or salt thereof,

wherein:

R<sup>1</sup> is H or C<sub>1</sub>-C<sub>8</sub> alkyl;

 $R^2$  is  $C_1$ - $C_8$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), -C(O)NH-( $C_1$ - $C_8$  alkyl), or  $C_1$ - $C_4$  haloalkyl;

R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>2</sub>-C<sub>8</sub> alkenyl, C<sub>2</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, hydroxy, OR<sup>9</sup>, alkoxyalkyl, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, hydroxyalkyl, NR<sup>10</sup>R<sup>11</sup>, CN, NO<sub>2</sub>, heterocycloalkyl, aryl, or heteroaryl, wherein said aryl and heteroaryl can be substituted with one or more substituents selected from C<sub>1</sub>-C<sub>8</sub> alkyl, halo, C<sub>1</sub>-C<sub>8</sub> haloalkyl, and alkoxy; or R<sup>4</sup> and R<sup>5</sup> together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

 $R^{8a}$  and  $R^{8b}$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or hydroxyalkyl, or  $R^{8a}$  and  $R^{8b}$  together with the carbon atom to which they are attached form a  $C_3$ - $C_7$  cycloalkyl group;

R<sup>9</sup> is H, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>1</sub>-C<sub>8</sub> alkenyl, C<sub>1</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl, and

 $R^{10}$  and  $R^{11}$  are each, independently, H,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl, or  $R^{10}$  and  $R^{11}$  together with the N atom to which they are attached form a heterocyclic ring; comprising:

## a) reacting a compound of Formula XII:

with a halogenating/sulfonating reagent for a time and under conditions suitable for forming a compound of Formula XI:

wherein X<sup>1</sup> is a leaving group;

b) reacting said compound of Formula XI with a compound of Formula:

or salt thereof, for a time and under conditions suitable for forming a compound of Formula X:

$$R^4$$
 $R^5$ 
 $R^6$ 
 $R^{8b}$ 
 $R^{8a}$ 
 $R^8$ 

or salt thereof;

c) reacting said compound of Formula X with a further halogenating/sulfonating reagent for a time and under conditions suitable for forming a compound of Formula IX:

$$R^4$$
 $R^5$ 
 $R^6$ 
 $R^{8b}$ 
 $R^{8a}$ 
 $R^8$ 
 $R^8$ 

or salt thereof;

wherein  $X^2$  is halo or  $SO_2R$ " and R" is  $C_1$ - $C_8$  alkyl, aryl, or heteroaryl each optionally substituted by one or more halo, cyano, nitro,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  haloalkyl,  $C_1$ - $C_4$  alkoxy, or  $C_1$ - $C_4$  haloalkoxy; and

- d) reacting said compound of Formula IX with a cyclizing reagent for a time and under conditions suitable for forming said compound of Formula V.
- 524. The process of claim 523 wherein said cyclizing reagent is a Lewis acid.
- 525. The process of claim 524 wherein said cyclizing reagent is AlCl<sub>3</sub>.
- 526. The process of claim 523 wherein said halogenating/sulfonating reagent is PBr<sub>3</sub> or PCl<sub>3</sub>.

527. The process of claim 523 wherein said further halogenating/sulfonating reagent is SOBr<sub>2</sub> or SOCl<sub>2</sub>.

- 528. The process of claim 523 wherein  $X^2$  is Br.
- 529. The process of claim 523 wherein  $X^1$  is Br.
- 530. The process of claim 523 wherein:

 $R^2$  is  $C_1$ - $C_8$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), or -C(O)NH-( $C_1$ - $C_8$  alkyl);  $R^3$  and  $R^6$  are each H;

 $R^4$  and  $R^5$  are each, independently, H, halo,  $C_1$ - $C_8$  haloalkyl, hydroxy,  $OR^9$ , alkoxyalkyl,  $NHR^{10}$ ,  $NR^{10}R^{11}$ , aryl, or heteroaryl, wherein said aryl can be substituted with up to two substituents selected from  $C_1$ - $C_8$  alkyl, halo,  $C_1$ - $C_8$  haloalkyl, and alkoxy, and said heteroaryl can be optionally substituted with up to two substituents selected from halogen and  $C_1$ - $C_8$  alkyl; or  $R^4$  and  $R^5$  together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

R<sup>7a</sup> is H;

R<sup>7b</sup> is H or C<sub>1</sub>-C<sub>8</sub> alkyl;

R<sup>8a</sup> and R<sup>8b</sup> are each H; and

 $R^{10}$  and  $R^{11}$  are each, independently,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  haloalkyl, aryl, heteroaryl, aralkyl, heteroarylalkyl, or allyl;

provided that:

- (A) if R<sup>2</sup> is methyl and R<sup>4</sup> is H, then R<sup>5</sup> is not thiazole, substituted thiazole or a thiazole derivative;
  - (B) if  $R^{7a}$  is H and  $R^{7b}$  is other than H, then neither  $R^4$  nor  $R^5$  can be H;
  - (C) if R<sup>1</sup> and R<sup>2</sup> are methyl, and R<sup>5</sup> is H then R<sup>4</sup> is not NHR<sup>10</sup> or NR<sup>10</sup>R<sup>11</sup>; and
- (D) if R<sup>1</sup> and R<sup>2</sup> are methyl and R<sup>5</sup> is H, then R<sup>4</sup> is not imidazolyl, substituted imidazolyl, or an imidazole derivative.
- 531. The process of claim 530 wherein  $R^1$  is H.
- 532. The process of claim 530 wherein  $R^1$  is  $C_1$ - $C_8$  alkyl.
- 533. The process of claim 530 wherein R<sup>2</sup> is methyl, ethyl, n-propyl, or isopropyl.
- 534. The process of claim 530 wherein  $R^2$  is methyl.
- 535. The process of claim 530 wherein R<sup>4</sup> is Cl, Br, haloalkyl, CF<sub>3</sub>, thiophenyl, furanyl, pyrrolyl, pyrazolyl, or imidazolyl.

- 536. The process of claim 530 wherein R<sup>4</sup> is Cl.
- 537. The process of claim 530 wherein  $R^5$  is methoxy, ethoxy, n-propoxy, isopropoxy, allyloxy, thiophenyl, furanyl, pyrrolyl, pyrazolyl, imidazolyl, or phenyl, wherein said imidazolyl is optionally substituted by one or more halo or methyl and said phenyl is optionally substituted with up to two substituents selected from  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  haloalkyl, halo, and alkoxy.
- 538. The process of claim 530 wherein R<sup>5</sup> is H.
- 539. The process of claim 523 wherein:

 $R^2$  is  $C_1$ - $C_4$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_4$  alkyl), or  $C_1$ - $C_4$  haloalkyl;

 $R^3$ ,  $R^4$ ,  $R^5$ , and  $R^6$  are each, independently, H, halo,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  haloalkyl, hydroxy,  $NH_2$ , CN, or  $NO_2$ ; and

 $R_{.}^{7a}$ ,  $R_{.}^{7b}$ ,  $R_{.}^{8a}$ , and  $R_{.}^{8b}$  are each H; provided that:

- (H) when R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl or -CH<sub>2</sub>-O-(C<sub>1</sub>-C<sub>4</sub> alkyl), then R<sup>3</sup> and R<sup>6</sup> are not both H; and
- (I) when R<sup>2</sup> is CH<sub>3</sub>, then R<sup>3</sup>, R<sup>4</sup>, and R<sup>6</sup> are each H and R<sup>5</sup> is not H or isopropyl.
- 540. The process of claim 539 wherein  $R^1$  is H.
- 541. The process of claim 539 wherein  $R^1$  is  $C_1$ - $C_8$  alkyl.
- 542. The process of claim 539 wherein  $R^2$  is  $C_1$ - $C_4$  alkyl or  $C_1$ - $C_4$  haloalkyl.
- 543. The process of claim 539 wherein R<sup>2</sup> is methyl, ethyl, isopropyl, n-butyl, or CF<sub>3</sub>.
- 544. The process of claim 539 wherein R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, methyl, NH<sub>2</sub>, CN, halo, CF<sub>3</sub>, NO<sub>2</sub>, or OH.
- 545. The process of claim 523 wherein R<sup>7a</sup>, R<sup>7b</sup>, R<sup>8a</sup>, and R<sup>8b</sup> are each H.
- 546. The process of claim 523 wherein R<sup>3</sup> and R<sup>6</sup> are each H.
- 547. The process of claim 523 wherein R<sup>3</sup>, R<sup>5</sup>, and R<sup>6</sup> are each H.
- 548. The process of claim 523 wherein R<sup>4</sup> is halo.

- 549. The process of claim 523 wherein R<sup>4</sup> is Cl.
- 560. The process of claim 523 wherein  $R^2$  is  $C_1$ - $C_4$  alkyl.
- 561. The process of claim 523 wherein  $\mathbb{R}^2$  is methyl.
- 562. The process of claim 523 wherein R<sup>1</sup> is H.
- 563. The process of claim 523 wherein  $R^1$  is H or  $C_1$ - $C_4$  alkyl,  $R^2$  is  $C_1$ - $C_4$  alkyl,  $R^3$  is H,  $R^4$  is halo,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 564. The process of claim 523 wherein  $R^1$  is H,  $R^2$  is Me,  $R^3$  is H,  $R^4$  is Cl,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.

# 565. A compound of Formula IX or X:

$$R^4$$
 $R^5$ 
 $R^6$ 
 $R^{8b}$ 
 $R^{8a}$ 
 $R^8$ 
 $R^8$ 

$$R^4$$
 $R^5$ 
 $R^6$ 
 $R^{8b}$ 
 $R^{8a}$ 
 $X$ 

or salt form thereof,

wherein:

R<sup>1</sup> is H or C<sub>1</sub>-C<sub>8</sub> alkyl;

 $R^2$  is  $C_1$ - $C_8$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), -C(O)NH-( $C_1$ - $C_8$  alkyl), or  $C_1$ - $C_4$  haloalkyl;

R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>2</sub>-C<sub>8</sub> alkenyl, C<sub>2</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, hydroxy, OR<sup>9</sup>, alkoxyalkyl, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, hydroxyalkyl, NR<sup>10</sup>R<sup>11</sup>, CN, NO<sub>2</sub>, heterocycloalkyl, aryl, or heteroaryl, wherein said aryl and heteroaryl can be substituted with one or more substituents selected from C<sub>1</sub>-C<sub>8</sub> alkyl, halo, C<sub>1</sub>-C<sub>8</sub> haloalkyl, and alkoxy; or R<sup>4</sup> and R<sup>5</sup> together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

 $R^{8a}$  and  $R^{8b}$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or hydroxyalkyl, or  $R^{8a}$  and  $R^{8b}$  together with the carbon atom to which they are attached form a  $C_3$ - $C_7$  cycloalkyl group;

 $R^9$  is H,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl;

 $R^{10}$  and  $R^{11}$  are each, independently, H,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl, or  $R^{10}$  and  $R^{11}$  together with the N atom to which they are attached form a heterocyclic ring;

X2 is halo or SO2R"; and

R" is  $C_1$ - $C_8$  alkyl, aryl, or heteroaryl each optionally substituted by one or more halo, cyano, nitro,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  haloalkyl,  $C_1$ - $C_4$  haloalkyl,  $C_1$ - $C_4$  haloalkoxy.

- 566. The compound of claim 565 wherein  $X^2$  is Br.
- 567. The compound of claim 565 wherein:

 $R^2$  is  $C_1$ - $C_8$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), or -C(O)NH-( $C_1$ - $C_8$  alkyl);  $R^3$  and  $R^6$  are each H;

R<sup>4</sup> and R<sup>5</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>8</sub> haloalkyl, hydroxy, OR<sup>9</sup>, alkoxyalkyl, NHR<sup>10</sup>, NR<sup>10</sup>R<sup>11</sup>, aryl, or heteroaryl, wherein said aryl can be substituted with up to two substituents selected from C<sub>1</sub>-C<sub>8</sub> alkyl, halo, C<sub>1</sub>-C<sub>8</sub> haloalkyl, and alkoxy, and said heteroaryl can be optionally substituted with up to two substituents selected from halogen and C<sub>1</sub>-C<sub>8</sub> alkyl; or R<sup>4</sup> and R<sup>5</sup> together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

R<sup>7a</sup> is H;

R7b is H or C1-C8 alkyl;

R8a and R8b are each H; and

 $R^{10}$  and  $R^{11}$  are each, independently,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  haloalkyl, aryl, heteroaryl, aralkyl, heteroarylalkyl, or allyl;

provided that:

- (A) if R<sup>2</sup> is methyl and R<sup>4</sup> is H, then R<sup>5</sup> is not thiazole, substituted thiazole or a thiazole derivative;
  - (B) if R<sup>7a</sup> is H and R<sup>7b</sup> is other than H, then neither R<sup>4</sup> nor R<sup>5</sup> can be H;
  - (C) if R<sup>1</sup> and R<sup>2</sup> are methyl, and R<sup>5</sup> is H then R<sup>4</sup> is not NHR<sup>10</sup> or NR<sup>10</sup>R<sup>11</sup>; and
- (D) if  $R^1$  and  $R^2$  are methyl and  $R^5$  is H, then  $R^4$  is not imidazolyl, substituted imidazolyl, or an imidazole derivative.
- 568. The compound of claim 567 wherein R<sup>1</sup> is H.
- 569. The compound of claim 567 wherein  $R^1$  is  $C_1\text{-}C_8$  alkyl.
- 570. The compound of claim 567 wherein R<sup>2</sup> is methyl, ethyl, n-propyl, or isopropyl.

- 571. The compound of claim 567 wherein R<sup>2</sup> is methyl.
- 572. The compound of claim 567 wherein R<sup>4</sup> is Cl, Br, haloalkyl, CF<sub>3</sub>, thiophenyl, furanyl, pyrrolyl, pyrazolyl, or imidazolyl.
- 573. The compound of claim 567 wherein R<sup>4</sup> is Cl.
- 574. The compound of claim 567 wherein  $R^5$  is methoxy, ethoxy, n-propoxy, isopropoxy, allyloxy, thiophenyl, furanyl, pyrrolyl, pyrazolyl, imidazolyl, or phenyl, wherein said imidazolyl is optionally substituted by one or more halo or methyl and said phenyl is optionally substituted with up to two substituents selected from  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  haloalkyl, halo, and alkoxy.
- 575. The compound of claim 567 wherein R<sup>5</sup> is H.
- 576. The compound of claim 567 wherein:

 $R^2$  is  $C_1$ - $C_4$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_4$  alkyl), or  $C_1$ - $C_4$  haloalkyl;

 $R^3$ ,  $R^4$ ,  $R^5$ , and  $R^6$  are each, independently, H, halo,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  haloalkyl, hydroxy,  $NH_2$ , CN, or  $NO_2$ ; and

 $R^{7a}$ ,  $R^{7b}$ ,  $R^{8a}$ , and  $R^{8b}$  are each H; provided that:

- (H) when R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl or -CH<sub>2</sub>-O-(C<sub>1</sub>-C<sub>4</sub> alkyl), then R<sup>3</sup> and R<sup>6</sup> are not both H; and
- (I) when R<sup>2</sup> is CH<sub>3</sub>, then R<sup>3</sup>, R<sup>4</sup>, and R<sup>6</sup> are each H and R<sup>5</sup> is not H or isopropyl.
- 577. The compound of claim 576 wherein  $R^1$  is H.
- 578. The compound of claim 576 wherein  $R^1$  is  $C_1$ - $C_8$  alkyl.
- 579. The compound of claim 576 wherein R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl or C<sub>1</sub>-C<sub>4</sub> haloalkyl.
- 580. The compound of claim 576 wherein R<sup>2</sup> is methyl, ethyl, isopropyl, n-butyl, or CF<sub>3</sub>.
- 581. The compound of claim 576 wherein R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, methyl, NH<sub>2</sub>, CN, halo, CF<sub>3</sub>, NO<sub>2</sub>, or OH.
- 582. The compound of claim 567 wherein  $R^{7a}$ ,  $R^{7b}$ ,  $R^{8a}$ , and  $R^{8b}$  are each H.
- 583. The compound of claim 567 wherein  $R^3$  and  $R^6$  are each H.

- 584. The compound of claim 567 wherein R<sup>3</sup>, R<sup>5</sup>, and R<sup>6</sup> are each H.
- 585. The compound of claim 567 wherein R<sup>4</sup> is halo.
- 586. The compound of claim 567 wherein R<sup>4</sup> is Cl.
- 587. The compound of claim 567 wherein  $R^2$  is  $C_1$ - $C_4$  alkyl.
- 588. The compound of claim 567 wherein  $R^2$  is methyl.
- 589. The compound of claim 567 wherein R<sup>1</sup> is H.
- 590. The compound of claim 567 wherein  $R^1$  is H or  $C_1$ - $C_4$  alkyl,  $R^2$  is  $C_1$ - $C_4$  alkyl,  $R^3$  is H,  $R^4$  is halo,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 591. The compound of claim 567 wherein  $R^1$  is H,  $R^2$  is Me,  $R^3$  is H,  $R^4$  is Cl,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 592. A method of resolving a mixture of compounds of Formula Va and Vb:

$$R^{4}$$

$$R^{5}$$

$$R^{6}$$

$$R^{8b}$$

$$R^{8a}$$

$$Va$$

$$Vb$$

wherein:

R<sup>1</sup> is H or C<sub>1</sub>-C<sub>8</sub> alkyl;

 $R^2$  is  $C_1$ - $C_8$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), -C(O)NH-( $C_1$ - $C_8$  alkyl), OH,  $C_1$ - $C_4$  haloalkyl, or CH<sub>2</sub>OH;

R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>2</sub>-C<sub>8</sub> alkenyl, C<sub>2</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, hydroxy, OR<sup>9</sup>, alkoxyalkyl, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, hydroxyalkyl, NR<sup>10</sup>R<sup>11</sup>, CN, NO<sub>2</sub>, heterocycloalkyl, aryl, or heteroaryl, wherein said aryl and heteroaryl can be substituted with one or more substituents selected from C<sub>1</sub>-C<sub>8</sub> alkyl, halo, C<sub>1</sub>-C<sub>8</sub> haloalkyl, and

WO 2005/019179 PCT/US2004/019279 alkoxy; or R<sup>4</sup> and R<sup>5</sup> together with the atoms to which they are attached form a 5- or 6-member

alkoxy; or R<sup>4</sup> and R<sup>5</sup> together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

R<sup>8a</sup> and R<sup>8b</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>2</sub>-C<sub>8</sub> alkenyl, C<sub>2</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or hydroxyalkyl, or R<sup>8a</sup> and R<sup>8b</sup> together with the carbon atom to which they are attached form a C<sub>3</sub>-C<sub>7</sub> cycloalkyl group;

 $R^9$  is H,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl; and

R<sup>10</sup> and R<sup>11</sup> are each, independently, H, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>1</sub>-C<sub>8</sub> alkenyl, C<sub>1</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl, or R<sup>10</sup> and R<sup>11</sup> together with the N atom to which they are attached form a heterocyclic ring; comprising:

contacting said mixture of compounds with a chiral resolving acid to form chiral resolving acid salts of said compounds, wherein said chiral resolving acid comprises substantially one stereoisomer; and precipitating said chiral resolving acid salts of said compounds, wherein the resulting precipitate is enriched in the chiral resolving acid salt of one of said compounds of Formula Va or Vb.

- 593. The method of claim 592 wherein said chiral resolving acid is tartaric acid.
- 594. The method of claim 592 wherein said chiral resolving acid is L-(+)-tartaric acid.
- 595. The method of claim 592 wherein said precipitate is enriched in the chiral resolving acid salt of said compound of Formula Va.
- 596. The method of claim 592 wherein:

 $R^2$  is  $C_1$ - $C_8$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), -C(O)NH-( $C_1$ - $C_8$  alkyl), OH, or CH<sub>2</sub>OH;

R<sup>3</sup> and R<sup>6</sup> are each H:

 $R^4$  and  $R^5$  are each, independently, H, halo,  $C_1$ - $C_8$  haloalkyl, hydroxy,  $OR^9$ , alkoxyalkyl,  $NHR^{10}$ ,  $NR^{10}R^{11}$ , aryl, or heteroaryl, wherein said aryl can be substituted with up to two substituents selected from  $C_1$ - $C_8$  alkyl, halo,  $C_1$ - $C_8$  haloalkyl, and alkoxy, and said heteroaryl can be optionally substituted with up to two substituents selected from halogen and  $C_1$ - $C_8$  alkyl; or  $R^4$  and  $R^5$  together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

R<sup>7b</sup> is H or C<sub>1</sub>-C<sub>8</sub> alkyl;

R<sup>8a</sup> and R<sup>8b</sup> are each H; and

 $R^{10}$  and  $R^{11}$  are each, independently,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  haloalkyl, aryl, heteroaryl, aralkyl, heteroarylalkyl, or allyl;

WO 2005/019179

PCT/US2004/019279

provided that:

- (A) if R<sup>2</sup> is methyl and R<sup>4</sup> is H, then R<sup>5</sup> is not thiazole, substituted thiazole or a thiazole derivative;
  - (B) if R<sup>7a</sup> is H and R<sup>7b</sup> is other than H, then neither R<sup>4</sup> nor R<sup>5</sup> can be H;
  - (C) if R<sup>1</sup> and R<sup>2</sup> are methyl, and R<sup>5</sup> is H then R<sup>4</sup> is not NHR<sup>10</sup> or NR<sup>10</sup>R<sup>11</sup>; and
- (D) if R<sup>1</sup> and R<sup>2</sup> are methyl and R<sup>5</sup> is H, then R<sup>4</sup> is not imidazolyl, substituted imidazolyl, or an imidazole derivative.
- 597. The method of claim 596 wherein R<sup>1</sup> is H.
- 598. The method of claim 596 wherein  $R^1$  is  $C_1$ - $C_8$  alkyl.
- 599. The method of claim 596 wherein R<sup>2</sup> is methyl, ethyl, n-propyl, or isopropyl.
- 600. The method of claim 596 wherein R<sup>2</sup> is methyl.
- 601. The method of claim 596 wherein R<sup>4</sup> is Cl, Br, haloalkyl, CF<sub>3</sub>, thiophenyl, furanyl, pyrrolyl, pyrazolyl, or imidazolyl.
- 602. The method of claim 596 wherein R<sup>4</sup> is Cl.
- 603. The method of claim 596 wherein  $R^5$  is methoxy, ethoxy, n-propoxy, isopropoxy, allyloxy, thiophenyl, furanyl, pyrrolyl, pyrazolyl, imidazolyl, or phenyl, wherein said imidazolyl is optionally substituted by one or more halo or methyl and said phenyl is optionally substituted with up to two substituents selected from  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  haloalkyl, halo, and alkoxy.
- 604. The method of claim 596 wherein R<sup>5</sup> is H.
- 605. The method of claim 592 wherein:

R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl, -CH<sub>2</sub>-O-(C<sub>1</sub>-C<sub>4</sub> alkyl), C<sub>1</sub>-C<sub>4</sub> haloalkyl, or CH<sub>2</sub>OH;

 $R^3$ ,  $R^4$ ,  $R^5$ , and  $R^6$  are each, independently, H, halo,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  haloalkyl, hydroxy,  $NH_2$ , CN, or  $NO_2$ ; and

R<sup>7a</sup>, R<sup>7b</sup>, R<sup>8a</sup>, and R<sup>8b</sup> are each H; provided that:

- (H) when R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl or -CH<sub>2</sub>-O-(C<sub>1</sub>-C<sub>4</sub> alkyl), then R<sup>3</sup> and R<sup>6</sup> are not both H; and
- (I) when R<sup>2</sup> is CH<sub>3</sub>, then R<sup>3</sup>, R<sup>4</sup>, and R<sup>6</sup> are each H and R<sup>5</sup> is not H or isopropyl.
- 606. The method of claim 605 wherein R<sup>1</sup> is H.

- 607. The method of claim 605 wherein  $R^1$  is  $C_1$ - $C_8$  alkyl.
- 608. The method of claim 605 wherein  $R^2$  is  $C_1$ - $C_4$  alkyl or  $C_1$ - $C_4$  haloalkyl.
- 609. The method of claim 605 wherein R<sup>2</sup> is methyl, ethyl, isopropyl, n-butyl, or CF<sub>3</sub>.
- 610. The method of claim 605 wherein R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, methyl, NH<sub>2</sub>, CN, halo, CF<sub>3</sub>, NO<sub>2</sub>, or OH.
- 611. The method of claim 592 wherein R<sup>7a</sup>, R<sup>7b</sup>, R<sup>8a</sup>, and R<sup>8b</sup> are each H.
- 612. The method of claim 592 wherein R<sup>3</sup> and R<sup>6</sup> are each H.
- 613. The method of claim 592 wherein R<sup>3</sup>, R<sup>5</sup>, and R<sup>6</sup> are each H.
- 614. The method of claim 592 wherein R<sup>4</sup> is halo.
- 615. The method of claim 592 wherein R<sup>4</sup> is Cl.
- 616. The method of claim 592 wherein  $R^2$  is  $C_1$ - $C_4$  alkyl.
- 617. The method of claim 592 wherein  $R^2$  is methyl.
- 618. The method of claim 592 wherein R<sup>1</sup> is H.
- 619. The method of claim 592 wherein  $R^1$  is H or  $C_1$ - $C_4$  alkyl,  $R^2$  is  $C_1$ - $C_4$  alkyl,  $R^3$  is H,  $R^4$  is halo,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 620. The method of claim 592 wherein  $R^1$  is H,  $R^2$  is Me,  $R^3$  is H,  $R^4$  is Cl,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 621. A chiral resolving acid salt of a compound of Formula Va or Vb:

wherein:

 $R^1$  is H or  $C_1$ - $C_8$  alkyl;

 $R^2$  is  $C_1$ - $C_8$  alkyl, -CH<sub>2</sub>-O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), -C(O)NH-( $C_1$ - $C_8$  alkyl), OH,  $C_1$ - $C_4$  haloalkyl, or CH<sub>2</sub>OH;

R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>2</sub>-C<sub>8</sub> alkenyl, C<sub>2</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, hydroxy, OR<sup>9</sup>, alkoxyalkyl, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, hydroxyalkyl, NR<sup>10</sup>R<sup>11</sup>, CN, NO<sub>2</sub>, heterocycloalkyl, aryl, or heteroaryl, wherein said aryl and heteroaryl can be substituted with one or more substituents selected from C<sub>1</sub>-C<sub>8</sub> alkyl, halo, C<sub>1</sub>-C<sub>8</sub> haloalkyl, and alkoxy; or R<sup>4</sup> and R<sup>5</sup> together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

 $R^{8a}$  and  $R^{8b}$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or hydroxyalkyl, or  $R^{8a}$  and  $R^{8b}$  together with the carbon atom to which they are attached form a  $C_3$ - $C_7$  cycloalkyl group;

 $R^9$  is H,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl; and

 $R^{10}$  and  $R^{11}$  are each, independently, H,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl, or  $R^{10}$  and  $R^{11}$  together with the N atom to which they are attached form a heterocyclic ring.

- 622. The salt of claim 621 wherein said salt is a tartaric acid salt.
- 623. The salt of claim 621 wherein said tartaric acid is L-(+)-tartaric acid.
- 624. The salt of claim 621 wherein said salt is a tartaric acid salt of a compound of Formula Va or a compound of Formula Vb.
- 625. The salt of claim 621 wherein:

WO 2005/019179

PCT/US2004/019279

 $R^2$  is  $C_1$ - $C_8$  alkyl, - $CH_2$ -O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), -C(O)NH-( $C_1$ - $C_8$  alkyl), OH, or  $CH_2$ OH;

R<sup>3</sup> and R<sup>6</sup> are each H;

 $R^4$  and  $R^5$  are each, independently, H, halo,  $C_1$ - $C_8$  haloalkyl, hydroxy,  $OR^9$ , alkoxyalkyl,  $NHR^{10}$ ,  $NR^{10}R^{11}$ , aryl, or heteroaryl, wherein said aryl can be substituted with up to two substituents selected from  $C_1$ - $C_8$  alkyl, halo,  $C_1$ - $C_8$  haloalkyl, and alkoxy, and said heteroaryl can be optionally substituted with up to two substituents selected from halogen and  $C_1$ - $C_8$  alkyl; or  $R^4$  and  $R^5$  together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

R<sup>7a</sup> is H;

R<sup>7b</sup> is H or C<sub>1</sub>-C<sub>8</sub> alkyl;

R<sup>8a</sup> and R<sup>8b</sup> are each H; and

 $R^{10}$  and  $R^{11}$  are each, independently,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  haloalkyl, aryl, heteroaryl, aralkyl, heteroarylalkyl, or allyl;

provided that:

- (A) if R<sup>2</sup> is methyl and R<sup>4</sup> is H, then R<sup>5</sup> is not thiazole, substituted thiazole or a thiazole derivative;
  - (B) if  $R^{7a}$  is H and  $R^{7b}$  is other than H, then neither  $R^4$  nor  $R^5$  can be H;
  - (C) if R<sup>1</sup> and R<sup>2</sup> are methyl, and R<sup>5</sup> is H then R<sup>4</sup> is not NHR<sup>10</sup> or NR<sup>10</sup>R<sup>11</sup>; and
- (D) if R<sup>1</sup> and R<sup>2</sup> are methyl and R<sup>5</sup> is H, then R<sup>4</sup> is not imidazolyl, substituted imidazolyl, or an imidazole derivative.
- 626. The salt of claim 621 wherein:

R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl, -CH<sub>2</sub>-O-(C<sub>1</sub>-C<sub>4</sub> alkyl), C<sub>1</sub>-C<sub>4</sub> haloalkyl, or CH<sub>2</sub>OH;

 $R^3$ ,  $R^4$ ,  $R^5$ , and  $R^6$  are each, independently, H, halo,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  haloalkyl, hydroxy,  $NH_2$ , CN, or  $NO_2$ ; and

R<sup>7a</sup>, R<sup>7b</sup>, R<sup>8a</sup>, and R<sup>8b</sup> are each H; provided that:

- (H) when R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl, -CH<sub>2</sub>-O-(C<sub>1</sub>-C<sub>4</sub> alkyl), or CH<sub>2</sub>OH, then R<sup>3</sup> and R<sup>6</sup> are not both H; and
  - (I) when  $R^2$  is  $CH_3$ , then  $R^3$ ,  $R^4$ , and  $R^6$  are each H and  $R^5$  is not H or isopropyl.
- 627. The salt of claim 621 wherein R<sup>8a</sup> and R<sup>8b</sup> are each H.
- The salt of claim 621 wherein R<sup>3</sup> and R<sup>6</sup> are each H.
- 629. The salt of claim 621 wherein R<sup>3</sup>, R<sup>5</sup>, and R<sup>6</sup> are each H.
- 630. The salt of claim 621 wherein R<sup>4</sup> is halo.

- 631. The salt of claim 621 wherein R<sup>4</sup> is Cl.
- 632. The salt of claim 621 wherein  $R^2$  is  $C_1$ - $C_4$  alkyl.
- 633. The salt of claim 621 wherein R<sup>2</sup> is methyl.
- 634. The salt of claim 621 wherein R<sup>1</sup> is H.
- 635. The salt of claim 621 wherein  $R^1$  is H or  $C_1$ - $C_4$  alkyl,  $R^2$  is  $C_1$ - $C_4$  alkyl,  $R^3$  is H,  $R^4$  is halo,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 636. The salt of claim 621 wherein  $R^1$  is H,  $R^2$  is Me,  $R^3$  is H,  $R^4$  is Cl,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 637. A composition comprising at least one chiral resolving acid salt of claim 621.
- 638. The composition of claim 637 wherein said composition comprises said tartaric acid salt form of a compound of Formula Va and said tartaric acid salt form of a compound of Formula Vb, wherein said composition is enriched in one of either of said tartaric acid salt form of a compound of Formula Va or said tartaric acid salt form of a compound of Formula Vb.
- 639. A hydrochloric acid salt of a compound of Formula Va or Vb:

$$R^{4}$$

$$R^{5}$$

$$R^{6}$$

$$R^{8b}$$

$$R^{8a}$$

$$V_{a}$$

$$V_{b}$$

wherein:

 $R^1$  is H or  $C_1$ - $C_8$  alkyl;

 $R^2$  is  $C_1$ - $C_8$  alkyl, - $CH_2$ -O-( $C_1$ - $C_8$  alkyl), C(O)O-( $C_1$ - $C_8$  alkyl), -C(O)NH-( $C_1$ - $C_8$  alkyl), OH,  $C_1$ - $C_4$  haloalkyl, or  $CH_2$ OH;

R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are each, independently, H, halo, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>2</sub>-C<sub>8</sub> alkenyl, C<sub>2</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, hydroxy, OR<sup>9</sup>, alkoxyalkyl, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, hydroxyalkyl, NR<sup>10</sup>R<sup>11</sup>, CN, NO<sub>2</sub>, heterocycloalkyl, aryl, or heteroaryl, wherein said aryl and heteroaryl can be substituted with one or more substituents selected from C<sub>1</sub>-C<sub>8</sub> alkyl, halo, C<sub>1</sub>-C<sub>8</sub> haloalkyl, and alkoxy; or R<sup>4</sup> and R<sup>5</sup> together with the atoms to which they are attached form a 5- or 6-member heterocyclic ring having one O atom;

 $R^{8a}$  and  $R^{8b}$  are each, independently, H, halo,  $C_1$ - $C_8$  alkyl,  $C_2$ - $C_8$  alkenyl,  $C_2$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, alkoxyalkyl, hydroxy, C(O)-alkyl, C(O)O-alkyl, C(O)NH-alkyl, or hydroxyalkyl, or  $R^{8a}$  and  $R^{8b}$  together with the carbon atom to which they are attached form a  $C_3$ - $C_7$  cycloalkyl group;

 $R^9$  is H,  $C_1$ - $C_8$  alkyl,  $C_1$ - $C_8$  alkenyl,  $C_1$ - $C_8$  alkynyl,  $C_3$ - $C_7$  cycloalkyl,  $C_1$ - $C_8$  haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl; and

R<sup>10</sup> and R<sup>11</sup> are each, independently, H, C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>1</sub>-C<sub>8</sub> alkenyl, C<sub>1</sub>-C<sub>8</sub> alkynyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, C<sub>1</sub>-C<sub>8</sub> haloalkyl, aralkyl, aryl, heteroaryl, heteroarylalkyl, or allyl, or R<sup>10</sup> and R<sup>11</sup> together with the N atom to which they are attached form a heterocyclic ring.

## 640. The salt of claim 639 wherein:

R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl, -CH<sub>2</sub>-O-(C<sub>1</sub>-C<sub>4</sub> alkyl), C<sub>1</sub>-C<sub>4</sub> haloalkyl, or CH<sub>2</sub>OH;

 $R^3$ ,  $R^4$ ,  $R^5$ , and  $R^6$  are each, independently, H, halo,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  haloalkyl, hydroxy,  $NH_2$ , CN, or  $NO_2$ ; and

 $R^{7a}$ ,  $R^{7b}$ ,  $R^{8a}$ , and  $R^{8b}$  are each H; provided that:

- (H) when R<sup>2</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl, -CH<sub>2</sub>-O-(C<sub>1</sub>-C<sub>4</sub> alkyl), or CH<sub>2</sub>OH, then R<sup>3</sup> and R<sup>6</sup> are not both H; and
  - (I) when R<sup>2</sup> is CH<sub>3</sub>, then R<sup>3</sup>, R<sup>4</sup>, and R<sup>6</sup> are each H and R<sup>5</sup> is not H or isopropyl.
- 641. The salt of claim 639 wherein R<sup>8a</sup> and R<sup>8b</sup> are each H.
- The salt of claim 639 wherein R<sup>3</sup> and R<sup>6</sup> are each H.
- 643. The salt of claim 639 wherein R<sup>3</sup>, R<sup>5</sup>, and R<sup>6</sup> are each H.
- 644. The salt of claim 639 wherein R<sup>4</sup> is halo.
- 645. The salt of claim 639 wherein  $R^4$  is Cl.
- 646. The salt of claim 639 wherein  $R^2$  is  $C_1$ - $C_4$  alkyl.

### WO 2005/019179

PCT/US2004/019279

- 647. The salt of claim 639 wherein R<sup>2</sup> is methyl.
- 648. The salt of claim 639 wherein R<sup>1</sup> is H.
- 649. The salt of claim 639 wherein  $R^1$  is H or  $C_1$ - $C_4$  alkyl,  $R^2$  is  $C_1$ - $C_4$  alkyl,  $R^3$  is H,  $R^4$  is halo,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 650. The salt of claim 639 wherein  $R^1$  is H,  $R^2$  is Me,  $R^3$  is H,  $R^4$  is Cl,  $R^5$  is H,  $R^6$  is H,  $R^{7a}$  is H,  $R^{7b}$  is H,  $R^{8a}$  is H, and  $R^{8b}$  is H.
- 651. A composition comprising at least one hydrochloric acid salt of claim 639.